

Hertfordshire County Council

Flood Investigation Report

Little Wymondley, Hertfordshire



Photos provided by local residents of Little Wymondley



Revision Schedule

Hertfordshire County Council

Flood Investigation Report

07 November 2014 Rev 04
ERP-INV-04 Little Wymondley

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Explanation of Acronyms

Acronym	Explanation
FWMA	Flood and Water Management Act 2010. Legislation which was developed as a result of the review of the serious flooding in 2007. It brings a range of new powers and duties to local authorities and other bodies.
LLFA	Lead Local Flood Authority. This is a 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.
LDA	Land Drainage Act 1991. Legislation which sets out a range of roles and responsibilities relating to flood risk management.
RMAs	Risk Management Authorities. Bodies identified in the FWMA with roles and powers to manage flood risk. This includes the county council, district councils, highway authorities, internal drainage boards, the Environment Agency and water utility companies.
HCC	Hertfordshire County Council

Glossary

Term	Explanation
Culvert	A round or box shaped pipe of either concrete, plastic or brick construction which carries water.
Fluvial Flooding	The source of this type of flooding is from a watercourse. This occurs when the capacity of the watercourse is overwhelmed as water escapes into the floodplain, an area that usually floods.
Riparian Landowners	Person or persons who own land in which a watercourse flows through
Rainfall return period	A severity of rainfall which has a probability of occurring in any one year.
Trash Screen	A screen which usually consists of vertical bars designed to catch debris carried by a flow of water. Usually installed at the entrance of a culvert to prevent blockage.

Executive Summary

In the early hours of the morning of 7 February 2014, the village of Little Wymondley near Hitchin in Hertfordshire experienced flooding which caused internal damage to at least four residential properties and one commercial property.

The flooding also impacted on access to the village making the main road, Stevenage Road, impassable. Those vehicles that did make it through the flood water created bow waves which increased the impact of the flooding. This was reported to the police by local residents, which resulted in the road being closed.

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) has investigated the flooding and published this report.

The aim of this report was to establish the causes of flooding, identify the relevant risk management authorities and confirm if those authorities intend to utilise any relevant powers in order to resolve the flooding where feasible.

It has been concluded that the flooding that occurred on 7 February was primarily as a result of rainfall over an extended period of time which saturated the catchment of the Ash Brook prior to the flood event. Any additional rainfall was unable to soak into the ground resulting in overland and surface water flows. These flows made their way into the Ash Brook and the unnamed watercourse along Priory Lane via field drains and surface water discharge points and overland via the surrounding fields and roads.

While an extended period of rainfall was the primary cause, it is also concluded that there are other factors which contributed to the flooding on 7 February 2014. These include blocked trash screens, culverts identified as too small for the capacity of the channel which caused water to back up and overwhelm the watercourse and cause water to flow outside of the channel; and lack of maintenance of open sections of watercourse. It should also be mentioned that vegetation within the open watercourses may have slowed the flow of water into Little Wymondley village centre which may have reduced the severity of the flooding. The same may also be concluded with regards to the blocked trash screen on Chantry Lane, where the water was diverted over open land before discharging back onto Stevenage Road. However, flowing water still made its way via Stevenage Road rather than via the culverted channel. In either case the water still would have made its way to the

centre of the village.

There has been a long history of flooding documented between 1926-2014. Each time the same locations have flooded along Stevenage Road and Priory Lane with differing severity. Apart from the development of the A1 (M) and the Stevenage Bypass based on historical maps there have been no fundamental changes to the built area in Little Wymondley that could be attributed to causing flooding in the village.

It is recommended that a technical hydraulic assessment is carried out to determine the key conditions that are required for flooding to occur within the catchment of Little Wymondley. This will help the community to understand when flooding is more likely to occur and be more prepared to protect their own property.

It is also recommended that the CCTV survey results of those assets identified within the report are assessed for their condition and maintenance and for HCC to inform the owners of those assets to ensure the assets are performing as they are designed to using their powers under the Land Drainage Act 1991.

HCC highways are recommended to assess and review the highway drainage infrastructure to demonstrate the drainage has the capacity to operate as designed to cater for highway run-off.

If all of the above is carried out, the correct course of action can then be determined to minimise the risk of flooding in Little Wymondley such as individual property level protection, removal or amendment of some of the existing structures and management of overland run-off from the surrounding fields.

There is no one solution to resolve the flooding in Little Wymondley 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 Risk Management Authorities, landowners, Wymondley Parish Council and the local community to manage flood risk.

1. Introduction

1.1 Context

Under Section 19 of the Flood and Water Management Act 2010 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 risk management authorities have responded to the flood event or are proposing to respond;
- publish its findings in a Flood Investigation Report;
- inform the relevant Risk Management Authorities of its findings.

As defined under section 6, subsection 13 of the Flood and Water Management Act, a risk management authority has certain powers to manage, regulate, assess and mitigate flood risk. HCC has identified the following risk management authorities as part of this section 19 flood investigation:

- Hertfordshire County Council as Lead Local Flood Authority
- North Herts District Council
- Stevenage Borough Council
- Hertfordshire County Council as Highway Authority
- Thames Water
- Anglian Water
- Highways Authority (A1M)

After 7 February 2014, HCC received reports that several residential properties and one commercial property had suffered internal flooding in the village of Little Wymondley. As a preparatory step to identify if a full flood investigation was to be carried out, HCC wrote to those residents on 11 April 2014 and to property owners believed to have been affected to confirm the reports. HCC received confirmation from four residential properties. It was also reported that the main road into and out of Little Wymondley was closed by Hertfordshire Constabulary due to the road becoming impassable and cars attempting to pass through the flood water and creating bow waves which increased the impact of flooding to properties.

Due to the severity of the flooding, HCC commissioned this Flood Investigation as it meets the criteria in Policy 2 of HCC's Flood Risk Management Strategy –

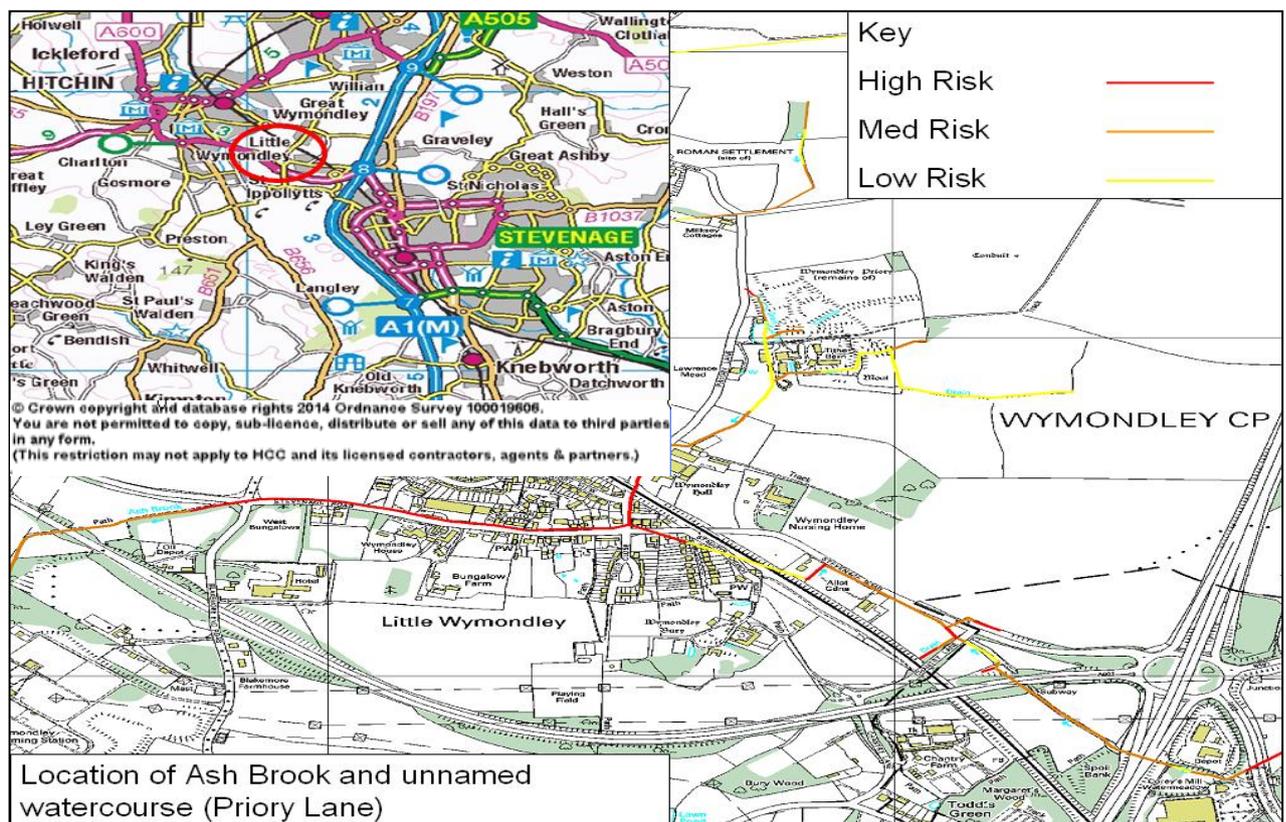
<http://www.hertsdirect.org/services/envplan/water/floods/floodrisk/lfrmsherts/>

1.2 Location

The village of Little Wymondley is located between Hitchin and Stevenage within the county of Hertfordshire. See Figure 1.2.1

The flooding that occurred on the 7 February 2014 affected the centre of the village and the roads that access the village from the north along Priory Lane and from the east and west along Stevenage Road. The properties affected by the flooding are located on Stevenage Road in the centre of the village up to Elms Close.

Figure 1.2.1



Little Wymondley lies within the catchment of the Ash Brook. Based on the information on the OS Maps and topography, the source of the Ash Brook is identified as being within Grove Wood near Green End north of the village of Graveley. See Appendix 1

It then flows through Graveley and is joined by another watercourse flowing from the east of Graveley. Once it has left Graveley it flows underneath the Stevenage bypass and into an online attenuation pond known as Corey's Mill water meadow.

The Ash Brook then continues into Little Wymondley where it is joined by another watercourse from the north which runs alongside Priory Lane. The Ash Brook continues west along Stevenage Road and eventually flows into the Ippollitts Brook at Hitchin.

1.4 Catchment characteristics

The catchment is predominantly cultivated farmland, with the villages of Graveley and Little Wymondley lying on the line of the Ash Brook. The catchment also includes part of the A1(M) motorway at Junction 8. Run-off from the A1(M) discharges into the Ash Brook. However the area of the A1(M) discharging into the catchment and the location of the outfall is unknown at the time of writing of this report.

The catchment responds quickly to heavy and prolonged rainfall due to the overlying geology consisting of clay with chalk below. Clay is generally impermeable allowing a minimal amount of rainfall to infiltrate through to the underlying chalk. This can result in surface water run-off if the soils are already saturated or if exposed to prolonged periods of rainfall. It can also result in the watercourses responding quickly to rainfall creating a 'flashy' catchment where water levels rise and recede quickly.

Little Wymondley lies within the lowest part of the catchment. The location and characteristics of the watercourses within the catchment are described in Tables 1.4.1 and 1.4.2 and can be viewed in Figure 2.

Table 1.4.1 Ash Brook

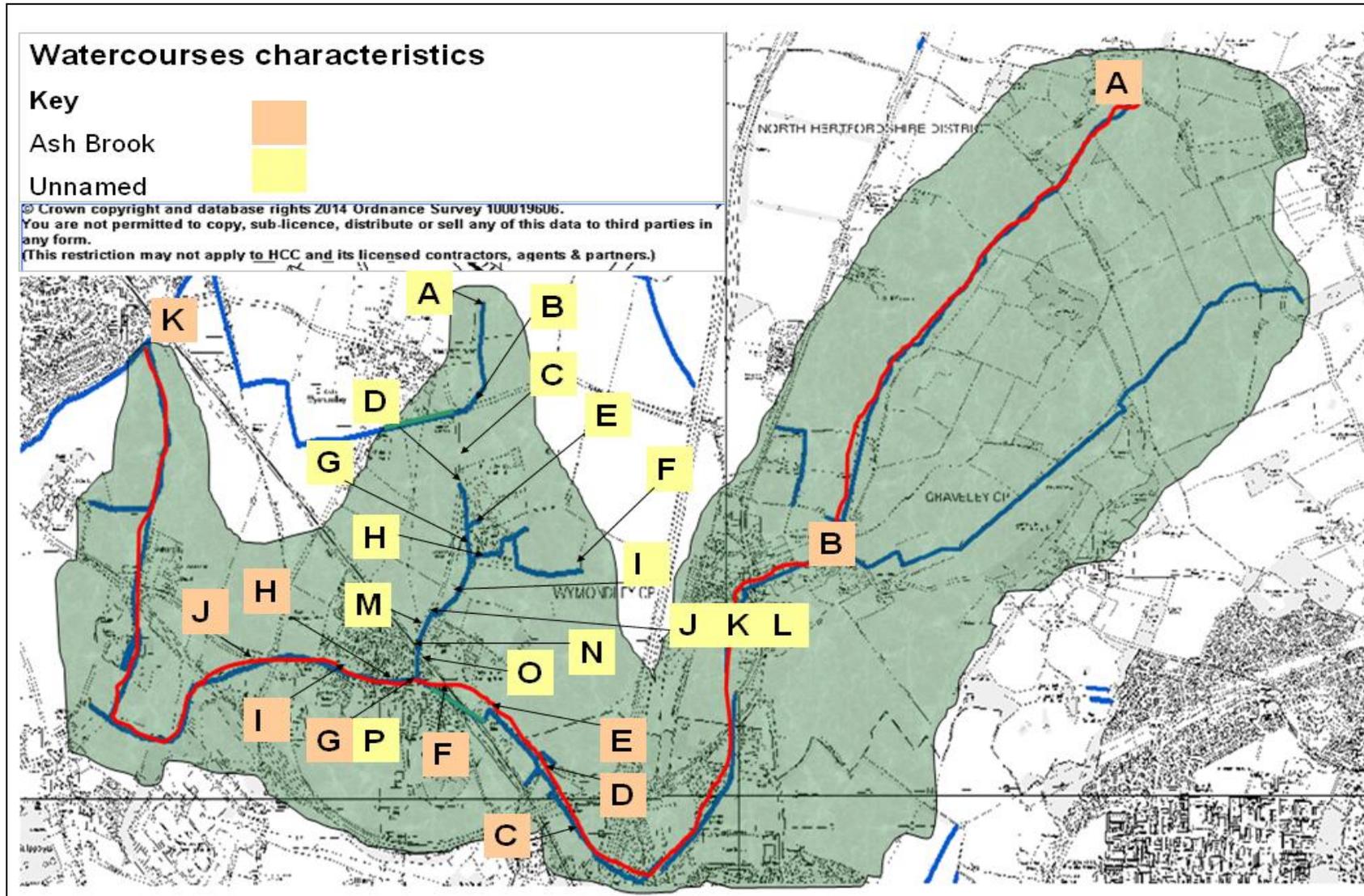
A	Starts near Green End north of Gravely
B	Flows through Gravely down to the A1 M then flows through Corey's Mill and under Junction 8
C	Flows from east to west through private farmland, reaches Chantry Lane where it enters a culvert with a smaller diameter with a vertical trash screen.
D	At the same point on the culvert there is another channel which discharges into it from underneath Stevenage Road. It appears to receive highway drainage and field drainage from the field to the north of Stevenage Road. Old maps show that there used to be a watercourse and an online pond within the field (see appendix 8b) - this is no longer present. There is an outfall from the field into the ditch which discharges into the culvert at Chantry Lane.
E	The Ash Brook continues to flow within a culvert of various diameters and construction along the southern boundary of Stevenage Road. There is a small open ditch flowing into the culvert adjacent to the allotments and car garage on Stevenage Road.
F	The Ash Brook remains in culvert and changes direction as it passes under the railway bridge and flows under the road to the northern boundary of Stevenage Road, until it reaches the corner of Priory Lane in Little Wymondley.
G	In this location the Ash Brook receives another watercourse where both are in open channel before passing under Priory Lane in a culvert. It is open again at the frontage of the Plume of Feathers Public House.
H	From here the watercourse is open with steep sides and varies in vegetation. There are numerous culverted crossings of the watercourse for vehicular access to residential properties. These vary in size and length. There are two large box culverts. One to access four residential properties and the other which forms Elms Close. Both of these culverts have large trash screens on the upstream side.
I	From Elms Close the watercourse is open in front of a commercial site then enters a lengthy culvert and becomes open again before Siccut Road.
J	From Siccut Road the watercourse is open along the boundary of Stevenage Road. It changes direction passing through a large box culvert underneath the round about becoming open again through farmland.
K	The watercourse remains open until it reaches and flows into the Ippollitts watercourse at Hitchin.

Table 1.4.2 Unnamed Watercourse (Priory Lane)

A	The unnamed watercourse appears to start north of Gravely Lane where it is open for its entire length.
B	It then flows through a small wooded area adjacent to Gravely lane and then passes through a brick arch culvert underneath Gravely Lane.
C	At this point it is unknown where this culvert discharges. Based on the topography of the area, it would be logical if this discharged into the small 300mm diameter culvert which flows south down Priory Lane within the left verge. This culvert also appears to receive highway drainage and field drainage, although many of the road gullies have been covered by earth and compacted due to vehicles driving along the edges of the verge.
D	Just after the first field south of Gravely Lane, there is an outfall into a depression in the adjacent field which is known as Wymondley Priory.
E	The depression carries on south until it becomes a defined channel before reaching an online pond which is full of water.
F	This pond forms part of the drainage from when the Priory was occupied. There are remnants of other channels flowing from east to west including a moat. These channels still flow after heavy rainfall and discharge into the pond.
G	The pond outfalls underneath the access road into the site through a culvert into an open channel. This channel remains open until it flows underneath two outbuildings.
H	The channel then becomes open again near to the silage towers where there is another outfall from an ancient ditch which has been culverted underneath the yards hardcore which flows from east to west.
I	The channel then remains open through several fields flowing south.
J	The channel then bends to the west at the back of Wymondley Hall Farm passing under a field crossing.
K	There is then a sharp bend to the south where the channel rejoins Priory Lane and flows south adjacent to the road.
L	The channel becomes shallow and narrow surrounded by trees either side.
M	It then flows into a culvert adjacent to a brick outbuilding and reappears outside the frontage of Wymondley House.
N	At this location there is an outfall which is believed to come from either a new culvert put in place due to collapse of an old culvert and a field drain which was found adjacent to the electrical substation on the west side of the road.
O	The channel reaches the railway line where it enters a brick arch culvert and opens again immediately on the south side of the bridge.

P	It is only open again for three to four meters then it enters another culvert before meeting the Ash Brook at the corner of Priory Lane and Stevenage Road.
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Figure 1.4.1



2. Background

2.1 7 February Flood Event

The UK experienced a period of extreme weather from late January to mid-February as a succession of major storms brought widespread damage and flooding to the UK.

Around six major storms occurred in this period, separated by intervals of two to three days. The sequence of storms followed an earlier stormy period from mid-December 2013 to early January 2014. Taken individually, the first two storms were notable but not exceptional for the winter period. However, the later storms from early to mid-February were much more severe. Overall, the two month period from mid-December 2013 to mid-February 2014 saw at least 12 major winter storms and, as a consequence, was the stormiest period of weather the UK has experienced for at least 20 years (source - Met Office). During the evening of 6 February and into the early hours of 7 February 2014, a severe storm with heavy rainfall hit a large part of Hertfordshire.

Preceding days of rainfall meant that the surrounding land was already saturated, preventing any further rainfall from infiltrating into the soil. As discussed previously, the catchment is predominantly clay and therefore not as permeable as other ground conditions.

To confirm the number of properties affected by the flooding, in April 2014 HCC wrote to those believed to have been flooded or within the area likely to have affected by flooding. Out of 44 letters HCC received four responses. Of those four, all of them confirmed that their homes had flooded. HCC believes that other properties were flooded including commercial properties. However, this has not been confirmed by the owners.

HCC also received confirmation that both Stevenage Road and Priory Lane coming into and out of Little Wymondley had been closed by Hertfordshire Constabulary due to the road becoming impassable. Where cars were making it through the flood water, they were creating bow waves which increased flooding to those already affected and other properties that had come close to flooding.

The flood water flows on Stevenage Road extended from Chantry Lane to Elms Close. Flood water flows on Priory Lane extended from Gravely Lane to the junction of Stevenage Road.

2.2 Previous flood events

Information has been obtained confirming that flooding has occurred prior to the flood event on the 7 February 2014 in Little Wymondley. There may be other flood events, however, the events listed below are the only events where evidence and accounts have been obtained. One resident stated: 'In recent history flooding has happened on several occasions to various degrees'.

Table 2.2.1 Previous flood events

Date of flood event:	Reported by:	Evidence of event:
Dec 2013	Local residents	Written letter
2000/01	HCC Highways	Highways incident reports
1993	Local resident- stated 'Last time my property was under significant threat from flooding was in 1993 and it was only prevented as it occurred during the day, when we saw the danger approaching'.	Written Letter
1968	EA Flood Maps and The Comet Magazine	Flood Map Data- see appendix 2a
1926-1956 Flooding occurred four times, two in the latter five years	HCC Highways, Parish Council and local residents	HCC Highways records- see appendix 2b

3. Assessment and observations

3.1 Sources of flooding

Fluvial

Fluvial flooding or flooding from rivers, streams, brooks, etc., occurs when the capacity of a watercourse is overwhelmed and water over tops the banks of the watercourse and enters the floodplain. This is a natural process but can be exacerbated by structures intercepting flows within the channel, such as culverts, bridges, pipe crossings, etc., and where development has taken place within the floodplain. This can displace flood water flows and the ability of water to be stored within the floodplain.

Surface water

Surface Water flooding can occur when rain lands on the surface of an impermeable material such as tarmac or concrete or across land where the ground is already saturated or made up of impermeable geology. These conditions prevent rainfall from infiltrating into the ground. The water then stays on the surface and begins to flow when there is sufficient volume and flows to its lowest point.

Even if there are drains and gullies intercepting these flows, under certain conditions the speed and volume of the flow may overwhelm and bypass the drainage system causing localised flooding.

Surface water flooding is exacerbated by increased development of impermeable areas which speeds up the flow from the land unless it is managed on site with a controlled outflow mimicking run-off rates and volumes prior to the land being developed. This can also be increased by the cumulative effect of small developments or paving of front gardens Surface water flooding can also be exacerbated as a result of the compaction of the ground as a result of use of heavy machinery and vehicles.

Drainage infrastructure

This includes surface water sewers, foul sewers, highway drainage and formal field drainage. These assets can cause flooding if they become blocked either through lack of maintenance, failure of the asset or where its capacity is exceeded by the

volume of water entering the system.

Artificial water bodies

Reservoirs, attenuation systems, man-made ponds and canals are all categorised as artificial water bodies. These can cause flooding if their capacity is overwhelmed and they either overtop or fail. Some of these water bodies may also have control structures to allow water to enter and exit the body of water. If these controls fail or are not maintained this can also result in flooding downstream or upstream of where they are situated.

3.2 Flood Maps

Risk of flooding from rivers

The Environment Agency (EA) has produced flood maps which show the predicted extent of the risk of flooding from the Ash Brook in Little Wymondley. This map shows categories of risk. Each category is represented by different shades of blue which are categorised as very low, low, medium and high risk. This map is publicly available on the EA website; <http://maps.environment-agency.gov.uk>.

The Risk of Flooding From Rivers map shows areas of Little Wymondley lie within a 'high risk' area of flooding from the Ash Brook.

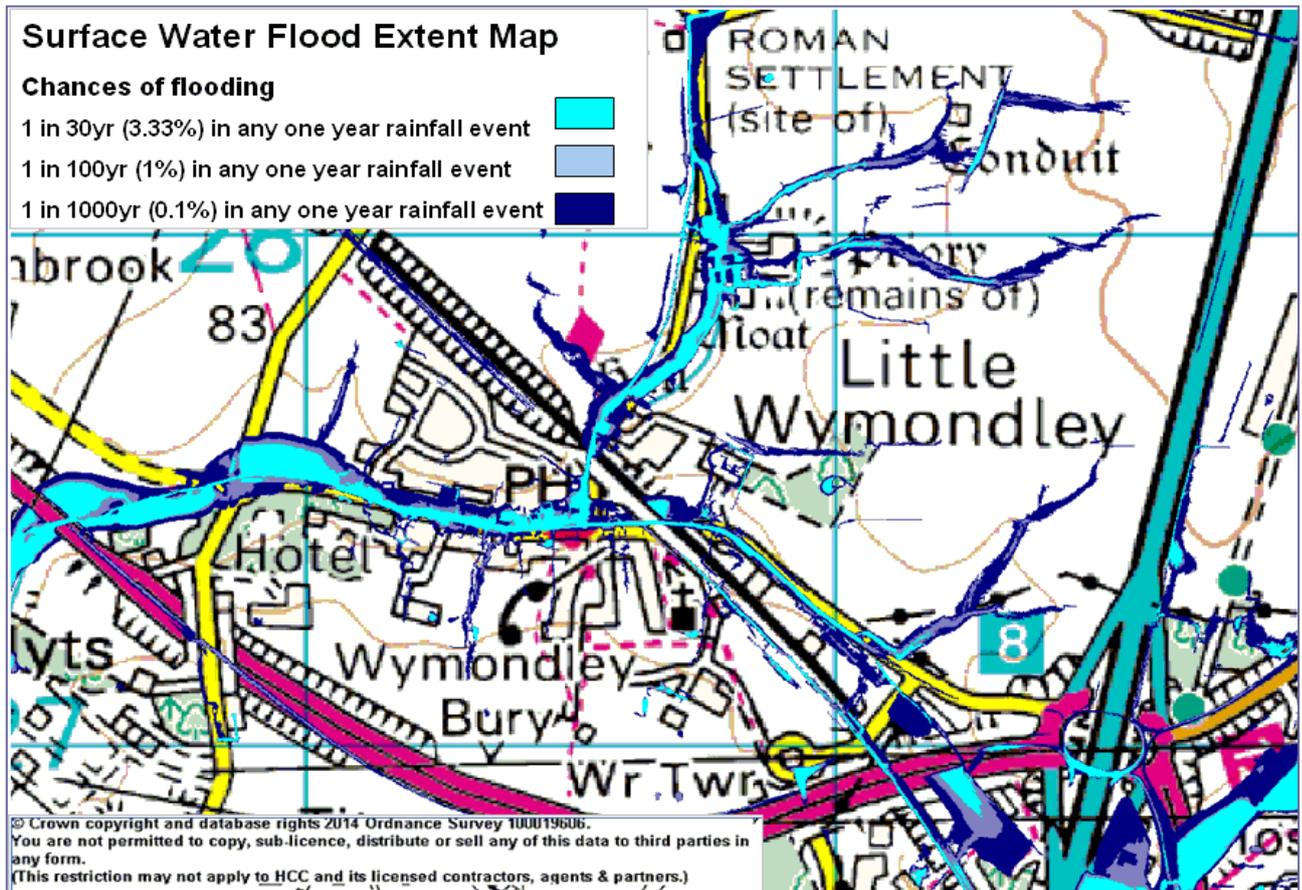
It should be noted that the unnamed watercourse along Priory Lane has not been mapped by the EA.

Risk of flooding from surface water

The EA has produced flood maps which show predicted areas susceptible to surface water flooding. Each category is represented by different shades of blue which are categorised as very low, low, medium and high risk from surface water flooding. This map is publicly available on the EA website; <http://maps.environment-agency.gov.uk>.

The risk of flooding from surface water map shows that Little Wymondley lies within a 'high risk' area susceptible to surface water flooding. The map below produced by HCC using the EA surface water data, represents the risk of surface water flooding using rainfall return periods.

Figure 3.2.1



3.3 Observations

All of the observations below have been recorded on diagrams in appendix 3a and 3b showing the location and direction of water flowing from the surrounding land and watercourses. Appendix 4 provides photos of the flooding that occurred on the 7 February 2014 obtained from HCC Highways and local residents.

Local residents reported that flooding started to occur in the early hours of the morning around 5am BST on 7 February as they could hear water flowing down Stevenage Road.

As some residents awoke in the Stevenage Road area, they found water within their properties and others experienced water flowing underneath their under floor voids.

It was then observed by residents that water was flowing down Priory Lane onto Stevenage Road which joined water flowing from the east along Stevenage Road. The rising flood water resulted in the roads becoming impassable.

Due to reports by local residents of vehicles driving through the flood water creating bow waves and increasing the impact of the flooding, Hertfordshire Police closed the roads into and out of Little Wymondley.

Hertfordshire Fire and Rescue also attended and were pumping water away from a local business on Priory Lane to prevent water from entering the property.

Water levels within Ash Brook were observed by local residents as reaching the top of the bank and exiting the watercourse on the right hand bank on Stevenage Road in the village flooding those properties where the ground is lower than the road.

It was reported by the local member and residents that the flood water flowing down Stevenage Road was the result of a blocked trash screen at Chantry Lane. The function of the trash screen is to prevent debris getting trapped inside the culvert but in doing so can become obstructed and interfere with flow in the watercourse if not maintained. The water was also observed to flow into the fields south of Stevenage Road at Chantry Lane flowing west through the allotments and flowing back onto Stevenage Road.

As water flowed into Little Wymondley, the flood water was added to by flows down Priory Lane. It was observed by staff at the Priory, water was flowing from an adjacent field to the entrance of the Priory onto Priory Lane.

Wymondley Hall Farm observed surface water run-off flowing from the east of the rear of the farm which then flowed through the farm yard onto Priory Lane via the farm entrance.

It was also recorded at the Wymondley Parish Council meeting that the watercourse along Priory Lane was already full and overflowing prior to the flood event on 7 February. It was also recorded that road gullies were blocked prior to and after the flood event.

Where Stevenage Road and Priory Lane meet, the water continued to flow down Stevenage Road and through the Plume of Feathers pub car park. Some of the water re-entered the Ash Brook and some carried on flowing down Stevenage Road.

Water continued to flow until it reached a traffic calming measure where there are raised kerbed areas either side of the road. At this point the water was observed trying to re-enter the Ash Brook immediately upstream of the trash screen in front of

a box culvert crossing. It was reported that the trash screen had debris collecting onto the diagonal bars. It was observed that water could not flow effectively through the trash screen which caused the water to back up creating a higher water level upstream of the trash screen compared to the water level downstream of the trash screen.

Water levels receded throughout the day and the flood waters were able to flow back into the watercourse by the end of the day.

3.3 Assets and features

For the purpose of this investigation assets have been recorded from the Junction 8 of the A1 (M) to Sicut Road in Little Wymondley and from Graveley Lane to the junction of Stevenage Road and Priory Lane.

A list of all known assets and features is provided below and should be read in conjunction with Figures 3.3.1 and 3.3.2

Table 3.3.1 Assets and features Ash Brook along Stevenage Road (A1(M) to Sicut Road)

Number of Asset/ Feature	Type of Asset/Feature	Location and observations
1	Attenuation water meadow	Corey's Mill water meadow, east of Junction 8 A1 M. Site visit arranged with Anglian Water 25 September 2014 confirmed the location of the inlet which is composed of 3 culverts with security screens. Outlet location and operation could not be confirmed due to overgrown vegetation blocking access.
2	900mm+ culvert downstream with trash screen	Underneath A1(M) Junction 8
3	Surface water attenuation pond	Located in private land designed to receive surface water from the Stevenage Bypass road. Observed overflow path from pond into Ash Brook where the pond had overtopped and bypassed the formal outfall.

4	Concrete lined channel	Located north of Stevenage road opposite junction of Chantry Lane. Choked with vegetation, start of the channel is unknown. Outfalls into natural open channel which is then culverted under Stevenage Road.
5	Outfall from culvert under Stevenage Road	As above, outfalls into the Ash Brook south of Stevenage Road. Heavily silted and difficult access.
6	Trash screen and culvert inlet	Located downstream of Asset 5, inlet to Ash Brook. Heavily silted and partially blocked with debris. Evidence that trash screen had been recently cleared with debris on the bank of the channel. Culvert size not known due to siltation of the bed. Concrete bag work surrounding the inlet, appears to be stable.
7	Outlet from field drainage pipe	Located north of Stevenage Road opposite Chantry Lane, Size unknown due to lack of visibility.
8	Culvert 600mm	Located underneath verge south of Stevenage Road. Appeared to be new section of pipe, located old section which had no flow through it, suggest old section abandoned and new section built around it to join further downstream into original culvert.
9	Concrete culvert 600mm with discharge outfall from ditch flowing along western boundary of allotments	Manhole located on frontage of commercial car garage. Appeared to be clear.
10	Brick arch culvert 600mm +	Located under verge of Stevenage Road to the south which then flows under the railway bridge and crosses under Stevenage Road to the rear of properties on the north side of Stevenage Road.
11	Concrete culvert outfall 600mm+	Located at the junction of Priory Lane and Stevenage Road, open section of channel at outfall free flowing with some vegetation.
12	Private access culvert 600+ with utility pipe crossing on downstream side	Located north of Stevenage Road in front of residential properties as a private access. Some vegetation and observed pipe crossing lower than soffit of the culvert.

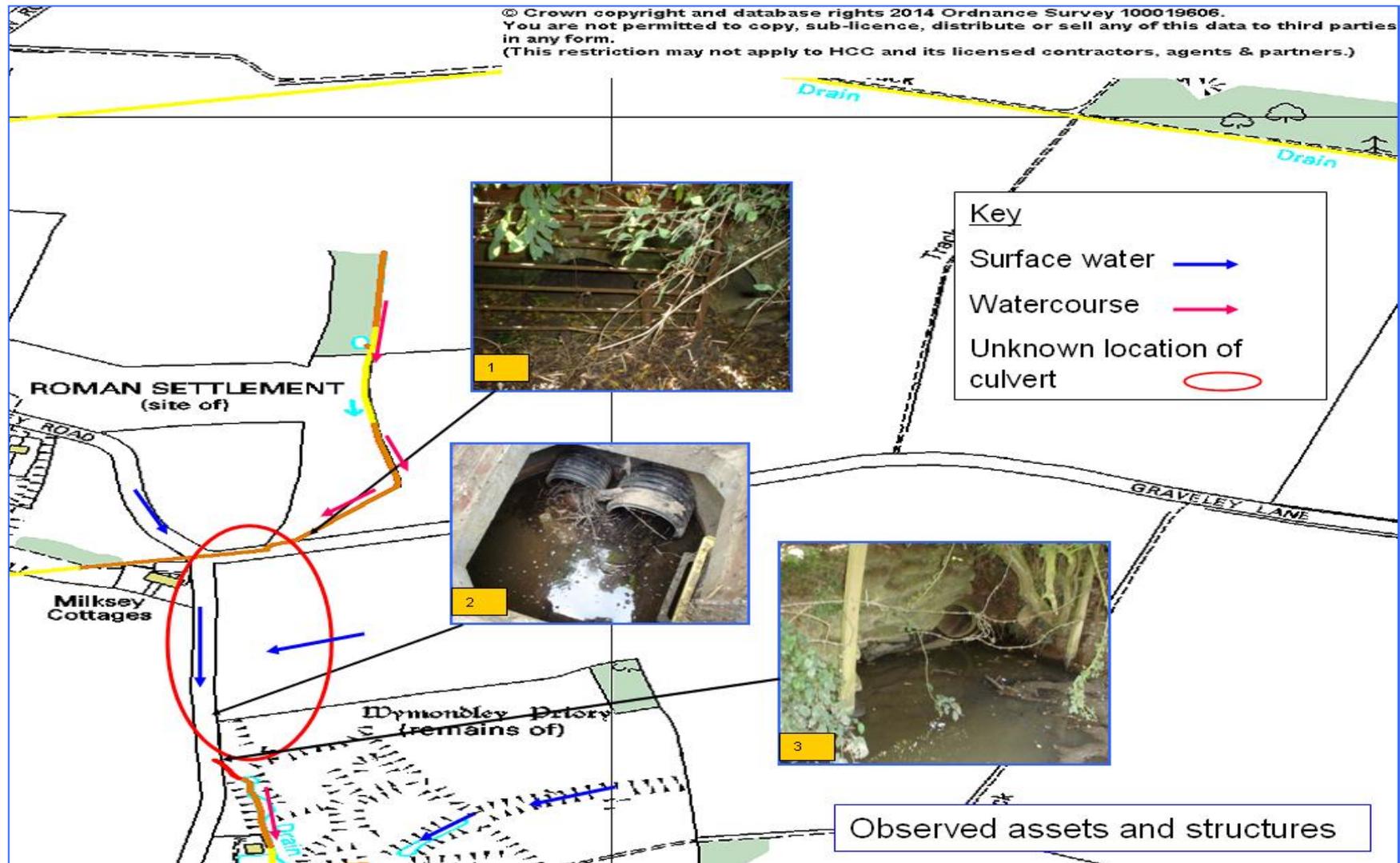
13	Upstream Trash Screen and box culvert	Located private access crossing north of Stevenage Road upstream of Elms Close
14	Downstream box culvert asset 13	As above
15	Upstream trash screen and box culvert	Located under Elms Close off Stevenage Road.
16	Upstream culvert 450mm +	Located downstream of Elms Close frontage of a commercial site. Steep sided banks, deep channel clear of vegetation.
17	Downstream culvert 600mm+	Located adjacent to open space north of Stevenage Road, open space adjoins Siccut Road, forms access into open space.

Table 3.3.2 Assets and features along Priory Lane (Graveley Lane to Stevenage Road)

Number of Asset/Feature	Type of Asset/Feature	Location and observations
1	Brick arch culvert and trash screen with brick base	Located underneath Gravely Lane. Unknown route. Assumed to flow south under the verge along Priory Lane. Open channel clear with leaf litter and other debris. Dry.
2	Plastic 1 x 300mm and 1 x 150mm culverts	Located next to verge on east side of Priory Lane. 150mm culvert blocked with debris. Unknown if this is the unnamed watercourse or highway drainage pipes.
3	Culvert 300mm+	Outlet from culvert located underneath Priory Lane into open channel at the north boundary of the Priory Farm land.
4	Open channel	Located downstream of asset 3 which then flows through open land, then into a defined channel into online pond at The Priory.
5	Brick arch culvert 450mm	Located at frontage of Wymondley Hall farm entrance. Electrical cable has

		been installed within the culvert
6	Brick Arch culvert 450mm	Located in the centre of Priory Lane outside the frontage of Wymondley Hall Farm entrance. Appears to have been broken into the top with a couple of lose bricks within the culvert.
7	Field drainage outlet	Located within the adjacent field next to the north west side of the railway bridge on Priory Lane. Heavily silted and could not see outlet from manhole.
8	450mm downstream culvert outlet frontage of Wymondley Hall farm	Located upstream of the railway bridge adjacent to Priory Lane within the west side verge.
9	Downstream outlet brick arch culvert	Located underneath the railway bridge west of Priory Lane.
10	Upstream inlet culvert 600mm	Located downstream of railway bridge on Priory Lane underneath verge west of Priory Lane.
11	Downstream outlet culvert 600mm	Located at the junction of Priory Lane and Stevenage Road

Figure 3.3.2



3.4 Condition of watercourses

Ash Brook- from A1(M) Junction 8 to Sicut Road

The Ash Brook flows through the Corey's Mill water meadow from underneath the A602. The water meadow contains trees, reeds and other vegetation. The inlet to the water meadow is located underneath the access road to HCC's Ringway depot.

Downstream of the A1(M), the Ash Brook is overgrown with vegetation within the channel along the length of the open watercourse between the A1(M) and Chantry Lane. The channel could not be seen at all.

Where the Ash Brook is open along its length it is narrow with steep banks with no marginal areas for vegetation to grow on the banks. This could lead to erosion and explain why the channel is heavily silted in places.

Along the frontage of the properties to the north of Stevenage Road in Little Wymondley village, there is a lot of debris from garden waste, leaf litter and twigs and branches from overhanging trees. This debris accumulates when it is dry and then is washed downstream during heavy rainfall.

Unnamed watercourse (Priory Lane) - from Graveley Lane to Stevenage Road

This watercourse is dry for its length upstream from the online pond at The Priory. North of Graveley Lane the channel is shallow running through a wooded area. There is no vegetation growing in this section of open channel. Where the channel is open from the pond at The Priory it is heavily overgrown down to where it meets Priory Lane. The channel then becomes very narrow and shallow.

There is very little flow within the channel from the pond in The Priory which may explain the heavy siltation in places. This watercourse is narrower and shallower than the Ash Brook.

3.5 Possible causes of flooding

Table 3.5.1

Possible Cause	Explanation
Duration of rainfall	2013/14 (Oct-February) recorded as wettest winter on record since records began. Days of preceding rainfall prior to the storm early hours on the 7 February (Met Office). Water levels would have already been high within both watercourses with little remaining capacity to receive further rainfall. This would have resulted in the banks of the watercourses overtopping in places.
Ground conditions and overland flows	Due to the preceding days of rainfall and the long wet period over the winter of 2013/14, the ground was saturated. This resulted in water flowing on the surface of the ground causing overland flood flows.
Land drainage and management	<p>The surrounding fields along Priory Lane and Stevenage Road contain built field drains. These drains result in higher run-off rates and volumes as water is concentrated into one point and flows faster off the land via a pipe or channel. This water discharges into the surrounding highways or existing drainage system. This will contribute to the rate and volume of water being received by the watercourses.</p> <p>Land can also be compacted from farm machinery and ploughing of the soils will influence surface water flood flows.</p>
Culverts	<p>There are many culverts along the Ash Brook and unnamed watercourse. Culverts that carry a watercourse require periodic maintenance to ensure they are free from obstruction and are in good condition to ensure the free flow of water in accordance with section 25 of the Land Drainage Act 1991. There are culverts which have been identified by the LLFA as too small for the capacity of the channel which cause water to back up if overwhelmed and cause water to flow outside of the channel i.e. the Chantry Lane culvert, the culvert outside Little Wymondley Hall and the culvert which runs from the Elms Close industrial estate down to the eastern boundary of open space on Siccut Road.</p> <p>Such assets can also cause flooding if blocked by debris,</p>

	<p>tree roots etc. or where a culvert has collapsed. There was no evidence at the time of writing this report that any of the culverts along Priory Lane and Stevenage Road have collapsed or are in a poor condition; this will need to be confirmed.</p>
Trash screens	<p>Trash Screens are put in place -to trap debris and litter entering a culvert to prevent the debris entering the culvert causing a blockage. However, if the screens are not designed correctly in accordance with EA National Guidance (Trash and Security Screens 2009) or maintained sufficiently, the screens themselves can become blocked. It has been confirmed that the trash screen at Chantry Lane became blocked which caused the water within the Ash Brook to back up and exit the channel and flood the surrounding land and flow down Stevenage Road.</p> <p>It was also reported that the two trash screens at Elms Close became partially blocked during the flood event which residents observed the water upstream to be higher than downstream, though unfortunately there are no recorded photos of this.</p>
Condition of watercourses	<p>Both watercourses are not entirely open and are culverted in several places, in some locations for very long lengths. The channel along Priory Lane is extremely narrow in places and overgrown, reducing its capacity to carry higher than normal flows. This means that when there is a heavy rainfall event, this watercourse reacts quickly to run-off entering the channel.</p> <p>Watercourses where open require regular maintenance to ensure the vegetation does not overgrow within and around the channel. This allows normal flows to be maintained which keeps debris and silt moving preventing it from settling within the channel. A buildup of silt over a long period of time can reduce the capacity of the channel. There are numerous locations along the Ash Brook and the unnamed watercourse where the channel is heavily silted and overgrown. There are also locations where vegetation has been removed or deposited within the channel after trees have been pruned and grass has been cut and, has</p>

	<p>been left within the channel. This will become mobile during high flows and potentially block any downstream culverts and trash screens.</p> <p>It has also been observed there is a section of revetment wall outside of the Elms Close industrial site that is collapsing into the Ash Brook.</p>
Topography	<p>Little Wymondley lies at the lowest point within the area of the Ash Brook catchment, with all overland flows, watercourses and highway drainage flowing into the village. When the water reaches the village it slows down due to the topography becoming level. This means the water takes longer to flow out of the village downstream towards Hitchin. Any assets, vegetation etc. at this point could also slow the flows down even further resulting in flood water reaching greater depths at this point increasing the level of flood risk.</p>
Bow waves	<p>Some properties in Little Wymondley have not suffered from flooding directly from the run-off and flow from the watercourses but had suffered flooding from vehicles driving through the flood water creating bow waves. These waves create high water levels as the water is pushed towards properties which could reach over door thresholds and enter low lying airbricks. It was reported by residents this was a problem on the 7 February 2014.</p>
Surface water	<p>While the land surrounding the village is predominately fields, it should be acknowledged that there are developed areas including the roads which generate surface water run-off. Where new development takes place, if the surface water is not managed to retain existing surface water run-off rates and volumes, this run-off will increase the volume and rate of run-off contributing to the flooding in Little Wymondley.</p> <p>At the time of writing this report HCC has not yet received information from the Highways Agency regarding the surface water run-off from the A1(M) to confirm the location of their drainage assets and where the A1(M) drainage outfalls.</p> <p>Apart from the development of the A1 (M) and the Stevenage Bypass there have been no fundamental</p>

	changes to the built area in Little Wymondley that could be attributed to causing flooding in the village. See appendix 8
Highway drainage	<p>Both Stevenage Road and Priory Lane are adopted roads and contain numerous gullies and drainage outfall pipes into the watercourses. There are many buried gullies along Priory Lane. This occurs where the road is too narrow to allow two way traffic. As a result, cars and heavy vehicles have driven up the verges which have subsequently collapsed covering manhole covers and open gullies. This prevents water from the highway entering the highway drainage system and results in water flowing down the highway until it reaches an open gully or to the lowest point. Due to the amount of rainfall on 7 February 2014, it is likely that if the gullies were open, these would have been overwhelmed due to the amount of run-off from the fields flowing onto the road. Highway drainage is only designed to cater for run-off generated by the impermeable area of the highway and not additional flows from the surrounding land.</p> <p>It was reported that at the time of the flooding, gullies in Stevenage Road were found to be blocked. Having asessed their location and outfall points, it is likely that due to the high level of water within the Ash Brook, the outfalls would have been submerged and prevented any flow from the roads entering the channel, causing water to back up further onto the road.</p>
Other assets	<p>Corey's Mill water meadow was built in the 1960s to cater for additional flows from the then called Stevenage Bypass. Since then it has changed ownership and has not received regular maintenance. Concerns for this asset were highlighted by local residents regarding the outfall from this asset and whether it had released more flows during the flood event. This will need to be verified by Anglian Water before it can be determined if this asset contributed to the flooding in Little Wymondley.</p>

4. Responsible Risk Management Authorities and other parties

4.1 Lead Local Flood Authority

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

Hertfordshire County Council - 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 have already or intend to utilise their own powers and to what extent.

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.

Both the Ash Brook and the unnamed watercourse are classified as Ordinary watercourses. HCC is the regulatory authority for ordinary watercourses in Hertfordshire under the Land Drainage Act 1991.

The LLFA has undertaken camera surveys (CCTV) of the identified culverts along Priory Lane and Stevenage Road. The results of the surveys will be assessed as part of the recommendations.

The relevant sections of the Act are as follows:

Section 23 of the LDA 1991 requires any person proposing works within the channel of an Ordinary Watercourse that could affect the flow to apply for written consent from HCC.

Section 24 of the LDA 1991 gives powers to HCC to enforce any contravention of Section 23 where works have been carried out without prior written consent.

Section 25 of the LDA 1991 gives enforcement powers to HCC to ensure riparian landowners of ordinary watercourses keep clear from obstruction from vegetation, debris, failing assets and blocked assets to ensure there is no impedance of flows.

4.2 District Council

North Herts District Council

The District Council has powers to carry out flood improvement works on ordinary watercourses under Section 14A of the Land Drainage Act 1991, as amended by the Flood and Water Management Act 2010. These powers are discretionary and works are subject to consultation with HCC and the Environment Agency.

The District Council has confirmed that they are not in a position to utilise these powers due to financial constraints.

North Hertfordshire District Council is the local planning authority for its area to determine planning applications for new development and approve and assess any impacts from all sources of flooding and any associated proposed drainage. In discharging these functions the local planning authority will consult and be guided by the advice of the Environment Agency, Drainage Boards and Water companies.

Stevenage Borough Council

The Borough Council for the purposes of this report only covers the area where the Corey's Mill water meadow is located. As this is an asset owned by Anglian Water, Stevenage Borough Council has no role in the management of flood risk as a risk management authority in relation to flood risk in Little Wymondley.

4.3 Highways Authority

Hertfordshire County Council - Highways

Both Stevenage Road and Priory Lane are HCC adopted roads. HCC Highways is the responsible authority to maintain and manage HCC adopted roads, including associated drainage infrastructure such as gullies, drainage pipes and any assets that lie within the highway boundary including culverted and open sections of watercourses and trash screens. Where there are sections of open watercourse outside of the highway boundary, the relevant landowner is responsible for its maintenance.

HCC Highways has powers to manage water on an adopted road under the Highways Act 1980.

It is confirmed by HCC Highways that the trash screens located at Elms Close were adopted by HCC Highways under section 38 as part of the Elms Close development in the 1990s. Therefore, the responsibility for maintenance of this asset lies with HCC Highways. The trash screen is listed on HCC Highways asset register as structure 2369 and is listed on a maintenance program. Records show that this screen was checked and cleared between one to five times a month by HCC Highways contractor Ringway from April 2012 to present day. HCC maintenance records show that the downstream trash screen was checked and maintained on 29 Jan, 3 Feb and 7 Feb 2014, which are prior to and on the day of the flood event.

HCC Highways has also confirmed that they are responsible for the trash screen and culvert carrying the Ash Brook from Chantry Lane down to the entrance of the Wymondley Nursing Home. However, this is not currently recorded on their asset register and therefore is not under a program of maintenance.

Highways Agency

The Highways Agency has responsibility to maintain and manage the national motorway and trunk road network including any associated assets. With regards to this investigation, they are responsible for the A1(M) motorway and any assets associated with the motorway including the associated drainage infrastructure and any of their drainage outfalls.

HCC are awaiting information from the Highways Agency to confirm if and where the A1(M) highway run-off discharges to the Ash Brook and if so where the outfalls are

located. HCC are also awaiting confirmation of the design of the highway drainage to understand how much the system caters for and what the highway drainage discharge rates should be under certain rainfall return periods to understand if this is a contributing factor to the flooding in Little Wymondley.

4.4 Water Utility Companies

Anglian Water

Anglian Water and a Land Registry search confirm that the Corey's Mill water meadow attenuation area located to the east of Junction 8 of the A1(M) is owned by Anglian Water.

The attenuation area was built in the 1960s to accommodate additional volume and rates of surface water drainage for when the A1(M) was built in 1962.

It is not known when Anglian Water adopted this asset and what maintenance regime exists to maintain this asset.

The water meadow is online and therefore part of the Ash Brook which also makes Anglian Water a riparian owner with the responsibility to maintain the watercourse and ensure it is free from obstruction.

Anglian Water has worked with the LLFA throughout the assessment of the flooding at Little Wymondley and in response has carried out the following:

- Inspected of the Corey's Mill water meadow
- Maintenance to clear the access to the outfall of Corey's Mill water meadow
- Inspected of the outfall of Corey's Mill water meadow to ascertain its condition and confirmed it is in good condition apart from the blocked trash screen
- Cleared the trash screen on the outfall structure to ensure free flow of water.
- Committed to delivering a clear maintenance plan

Thames Water

There are no assets owned and maintained by Thames Water. They are therefore not considered a relevant risk management authority.

Other responsible parties

4.5 Landowners

Landowners are responsible for the management of their land, any associated drainage, including drainage ditches, land management practices and overland run-off. There is no legal obligation for those landowners to reduce the run-off from their land, however in the interests of reducing flood risk to Little Wymondley this should be considered.

4.6 Riparian owners

A Riparian Owner is an owner of land and or asset (culvert that carries a watercourse, etc.) through which a watercourse flows or where a watercourse is adjacent to their land. There are numerous riparian landowners within Little Wymondley that own sections of the Ash Brook and the unnamed watercourse along priory lane.

Each of these (riparian) landowners are responsible for maintaining their section of watercourse to ensure the flow within the channel is maintained and kept free from obstruction such as debris including the maintenance and repair of any associated structures such as trash screens, culverts, bridges, etc.

At the time of writing this report HCC can confirm that the following authorities and bodies have riparian responsibilities :

- HCC Highways - Ash Brook from Chantry Lane (including trash screen) to Stevenage Road west of the railway bridge opposite the Wymondley nursing home. Elms Close Culvert and Trash Screen
- Anglian Water - Corey's Mill water meadow where the Ash Brook flows through the meadow.
- Network Rail - Culverts underneath both railway bridges crossing Stevenage Road and Priory Lane for the length of the bridge and abutments

There are many unknown private riparian owners, including crossings into residential areas, online pond, culverts within farmland, crossings, culverts under buildings and open sections of watercourse.

5. Conclusions and recommendations

5.1 Conclusions

The winter of 2013/14 was confirmed to be the wettest winter on record for the UK and the major factors causing the flooding on 7 February 2014 were the amount, the intensity and longevity of the rainfall in the days leading up to this flood event.

In addition to this, all of the possible causes listed in section 3.5 contributed to the flooding on 7 February 2014 and are likely to have contributed to previous flood events in Little Wymondley.

The flooding investigated in Little Wymondley cannot be attributed to any single cause. Instead, each of the possible causes contributed to the flooding.

Due to the confined area in which both watercourses flow through Little Wymondley, there needs to be a collaborative approach between the LLFA, relevant landowners and all the identified relevant risk management authorities, in order to develop and provide a suitable resolution to the flooding

To help facilitate this, recommendations for each relevant risk management authority and responsible landowner and affected residents are set out below.

5.2 Recommendations

Risk Management Authorities

Hertfordshire County Council – Lead Local Flood Authority

HCC, in its capacity as Lead Local Flood Authority, will work with the relevant organisations to seek to implement the recommendations from the investigation report.

It is recommended that HCC LLFA action the following:

1. HCC appoints a specialist consultant to assess the catchment and confirm the location and extent of all sources of flooding to develop options where mitigation and management of flood risk can be achieved. The assessment will also quantify under what conditions flooding is expected

including the required rainfall return period. Particular emphasis will be given to the assessment of existing trash screens, viability of de-culverting parts or the watercourses, ground levels within the roads and kerb heights and land management.

2. Share the results of CCTV surveys of the culverts along Priory Lane and Stevenage Road that carry the ordinary watercourses with the appointed consultant to confirm the condition and potential impacts of the culverts.
3. Will review and assess the impacts of the trash screens at Chantry Lane and Elms Close to determine if they should remain in place, be redesigned or removed. This assessment will be undertaken as part of the work to be carried out by an appointed consultant. The recommendations from this assessment will be provided to HCC Highways Authority where they are responsible for the asset to decide if any of the recommendations are feasible to take forward.
4. The results of this assessment will be shared and communicated with all Risk Management Authorities, affected residents, the Parish Council and relevant landowners to agree a collaborative action plan where options are financially and technically feasible.
5. Consult with North Herts District Council as the risk management authority, who has the powers to undertake flood risk improvement works to ordinary watercourses under section 14A of the Land Drainage Act 1991 where recommendations relate to the removal, alteration or construction of works on an Ordinary Watercourse.
6. Identify key landowners and riparian owners to inform them of the results of the CCTV surveys of the culverts along Priory Lane and Stevenage Road and, where relevant, advise riparian owners of their responsibility to maintain, repair or replace under section 25 of the Land Drainage Act 1991.

7. Consult with North Herts District Council for any works to be undertaken in relation to Section 25 of the Land Drainage Act 1991
8. Will provide a program of timescales for all of the above actions.

Hertfordshire County Council as Highway Authority

It is recommended that HCC Highways action the following:

1. Review the condition of the assets that are HCC Highways Authority responsibility to determine if any remedial/ maintenance measures is warranted.
2. Assist with the technical assessment of the Stevenage Road trash screens and schedule any necessary works.
3. Program works associated with any assets within their ownership along the Ash Brook and unnamed watercourse along Priory Lane that is identified as in poor condition from the CCTV survey.
4. Assess maintenance regime of all gullies and drainage along Priory Lane and Stevenage Road and determine if the current regime is appropriate.
5. Assess if there are any resilience measures to manage the roads in and out of Little Wymondley during a flood event, including signage, closure procedures, etc. to prevent vehicles increasing flood risk by creating bow waves
6. Provide a timescale for all of the above to be undertaken

Highways Authority

1. To provide information on their surface water drainage assets and surface water run-off data where the Ash Brook receives surface water run-off from the A1(M).

North Herts District Council

It is recommended that North Herts District Council action the following:

1. Confirm to those residents affected by flooding how to apply for a Repair and Renew flood grant to implement property level protection measures.

Anglian Water

It is recommended that Anglian Water both as a riparian owner and an asset owner action the following:

1. Provide a copy of the maintenance plan of Corey's Mill to the LLFA once it has been developed.
2. Assess if the current water meadow requires any upgrade since it was built with regards to how much surface water run-off it receives.
3. Assess the water meadow's capacity and assess whether it should be listed under the Reservoirs Act 1975 if it meets the amended criteria under the Flood and Water Management Act 2010.
4. Provide a timescale for when the above will be undertaken.

Other parties

Riparian landowners

It is a requirement under the Land Drainage Act 1991 that landowners of land through which an open channel and/ or culverted section of watercourse flows:

1. Inspect and comply with the Land Drainage Act 1991 to ensure their section of watercourse including any structures such as culverts, bridges, vegetation and debris are not impeding flows within the channels of the Ash Brook and unnamed watercourse along Priory Lane.
2. Apply for prior written consent from HCC LLFA under Section 23 of the Land Drainage Act 1991 for any works that may affect flow within an Ordinary Watercourse. Further guidance on how to apply can be found on the HCC

website

<http://www.hertsdirect.org/services/envplan/water/floods/ordwatercourse/consent/>

3. Where a riparian owner has an open section watercourse within their land that requires land managed including the maintenance of trees, plants, grass etc., ensure that no debris enters the watercourse which could cause a blockage downstream.

Guidance on riparian ownership can be found in the Environment Agency's 'Living on the Edge' document

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297423/LIT_7114_c70612.pdf

Wymondley Parish Council

Based on the findings of this report there would not appear to be any simple course of action that would reduce the probability and impact of flooding to Little Wymondley. The potential for a flood alleviation scheme is limited due to the confined nature of the watercourses and cost benefit viability. The Parish Council may wish to consider developing a 'Flood Plan' for the village with involvement and assistance from the local community to prepare those at risk for what to do before, during and after a flood event.

Advice can be sought on this from the National Flood Forum, HCC Resilience and the Environment Agency. There are other examples within Hertfordshire and adjoining counties of communities that are affected by flooding on a regular basis that have formed Flood Action Groups.

6.0 Next Steps

1. HCC LLFA will attend the Wymondley Parish Council Meeting on November 24 2014. Any feedback from this meeting will be fed into the recommendations outlined in section 5.2 of this report and taken forward when commissioning a specialist consultant to undertake further assessment and identify possible options.
2. HCC LLFA will commission a CCTV survey to take place before the end of October 2015.
3. HCC LLFA will commission a specialist consultant by the end of November 2014 with the aim of having a technical assessment report complete by mid-February 2015.
4. Once options have been identified, HCC will arrange a meeting with relevant risk management authorities to scope those options and take any feasible options forward. This will take place by the end of March 2015 following the consultant's report and CCTV surveys.

7.0 Disclaimer

This report has been prepared as part of HCC'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.

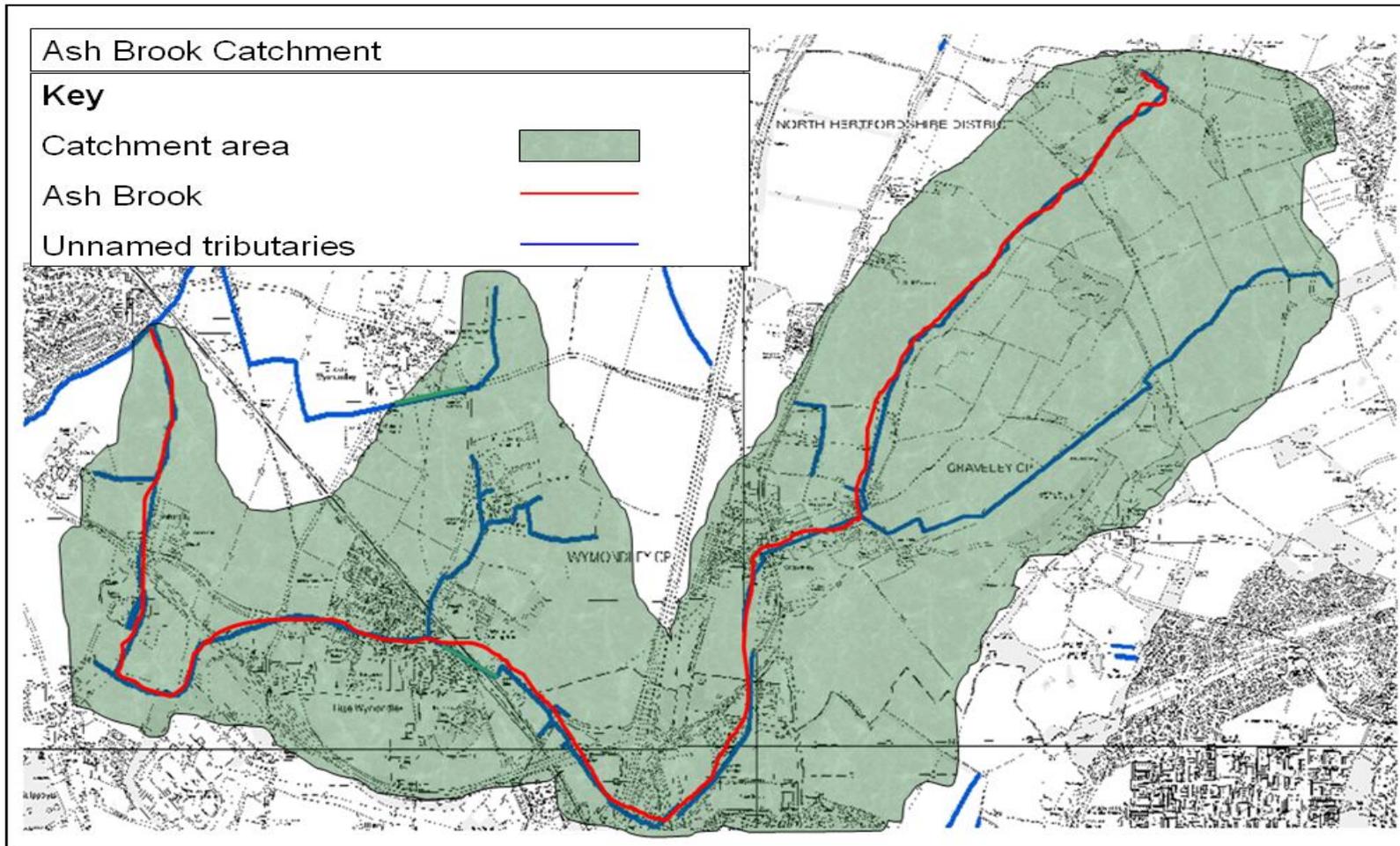
The findings of the report are based on a subjective assessment of the information available by those undertaking the investigation and therefore may not include all relevant information. As such it should not be considered as a definitive assessment of all factors that may have triggered or contributed to the flood event. Hertfordshire County Council expressly disclaims responsibility for any error in, or omission from, this report arising from or in connection with any of the assumptions being incorrect.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the time of preparation. Hertfordshire County Council expressly disclaims responsibility for any error in, or omission from, this report arising from or in connection with those opinions, conclusions and any recommendations.

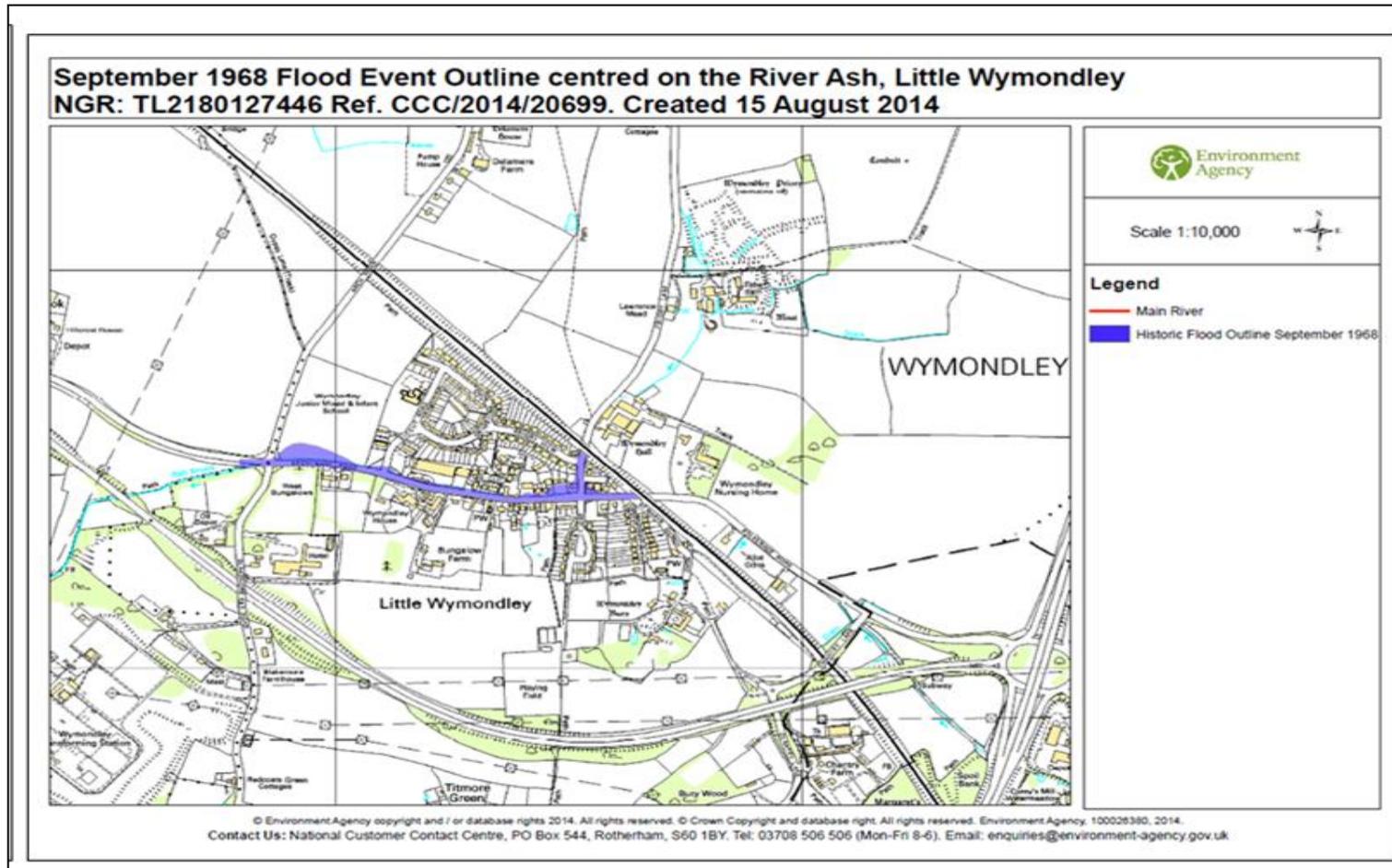
Hertfordshire County Council does not accept any liability for the use of this report or its contents by any third party.

Appendices 1-5

Appendix 1- Ash Brook Catchment



Appendix 2a Historical Flooding 1968



Appendix 2b- Historical flooding 1926-1956

HERTFORDSHIRE COUNTY COUNCIL
HIGHWAYS DEPARTMENT
 COUNTY SURVEYOR
 C. H. FROLIOTT, B.Sc., M.C.E., Chartered Civil Engineer
 NORTHERN COUNTY ROADS DIVISION
 Divisional Surveyor's Office
 GROVE MILL,
 GROVE ROAD, HITCHIN.
 Tel.: Hitchin 3781/2

My Ref. 4,03/2, KMM.
 Your Ref. B/4.

6th February, 1956.

Dear Sir,

FLOODING AT LITTLE WYMONDLEY - A.602.

With reference to your memo of the 24th ultimo, with enclosed letters from the Wymondley Parish Council and the Hitchin Rural District Council, which are returned herewith, I enclose a tracing showing approximately the location of the flooding.

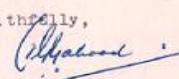
The Class I Road has been flooded between the junctions of C.10 and U.28, on two occasions during the 5 years that I have been in the Northern Division and I am informed that altogether it has occurred four times in the past 30 years. It is, therefore, of infrequent occurrence and the flood water quickly gets away.

It appears that the cause of the flooding, when it occurs, is due to water coming off the land on both sides of Road U.28 and running down that road on to Road A.602, without getting into the ditch at all.

I have had all the culverts checked as far as possible, and they seem to be free from obstructions.

The solution would appear to be to lead all the water from Road U.28, into the ditch on the East side of the Road, South of the Railway, enlarge the ditch and substitute a box culvert for the 24" pipes marked "A".

It is a problem that I would like to discuss with your Drainage Officer on the site.

Yours faithfully,

 Divisional Surveyor.

The County Surveyor.

1926-1956

1956

Dear Sir,

Flooding at Little Wymondley.

With further reference to your letter of the 16th January, my assistants have inspected the brook at Little Wymondley and the following conclusions have been reached.

- The lane leading to Great Wymondley from the "Flume of Peathers".
 Flooding of this lane is caused by the fact that the road virtually acts as a ditch for the purpose of draining water from the agricultural land during periods of heavy rain. There is very little that can be done to improve matters in this lane other than by a very expensive drainage scheme, which the traffic along this road does not warrant. At the "Flume of Peathers" the water does find difficulty at the moment in getting into the ditch and I am taking steps to improve the flow of water into this ditch so that flooding should be reduced at this point.
- Flooding of gate across adjoining A.602.
 The County Council are responsible for two culverts, one in the lane at the "Flume of Peathers" and one crossing the A.602 at the cross roads west of Little Wymondley. Both these culverts, I consider, are of adequate size to deal with even abnormal flows of water. The flooding could appear to be caused by the inadequate size of the watercourse and a brick barrel culvert which runs under private property on the north side of the road west of the "Flume of Peathers". This brick barrel is entirely for the benefit of private property owners and must have been placed in position by their predecessors at some date in the past. It would therefore be their responsibility.

In view of the fact that flooding has been caused in this area, I am forwarding details to the Great Ouse Catchment Board in whose area this stream lies and I am asking the Engineer if he will investigate this complaint.

... I return your letter from the Rural District Council as requested.

Yours faithfully,
 County Surveyor.

S. Lloyd Thomas, Esq.,
 Clerk to Wymondley Parish Council,
 131, Barton Way North,
 LETCHWORTH,
 Herts.

Appendix 2b-(continued) Historical flooding 1926-1956

Copy to K. M. Mahood, Esq.

0/9/NAK. 374/72.

1926-1956

128

24th February, 1956.

Dear Sir,

Flooding at Little Wymondley.

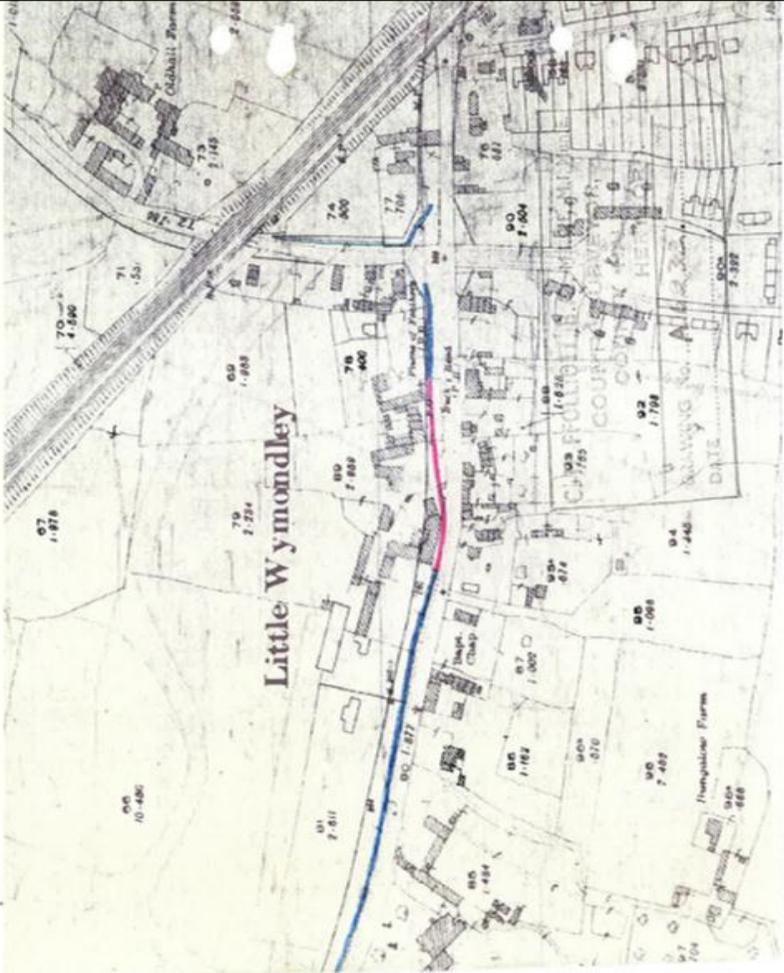
... I enclose herewith copies of letters received from the Wymondley Parish Council and my reply thereto. Also enclosed is a 1/500 scale plan showing the watercourse in blue and the offending brick barrel in red. I do not know the actual line of the brick barrel but the position would appear to be something like that indicated on the plan.

This watercourse appears to be within your Catchment Area and I shall be very glad if you will investigate this complaint and take any action which you can on this matter. One point which might be borne in mind is that this flooding occurs at infrequent intervals, my Divisional Surveyor reports that he has been informed that altogether this happened four times during the past thirty years but two of these occasions have been within the last five years.

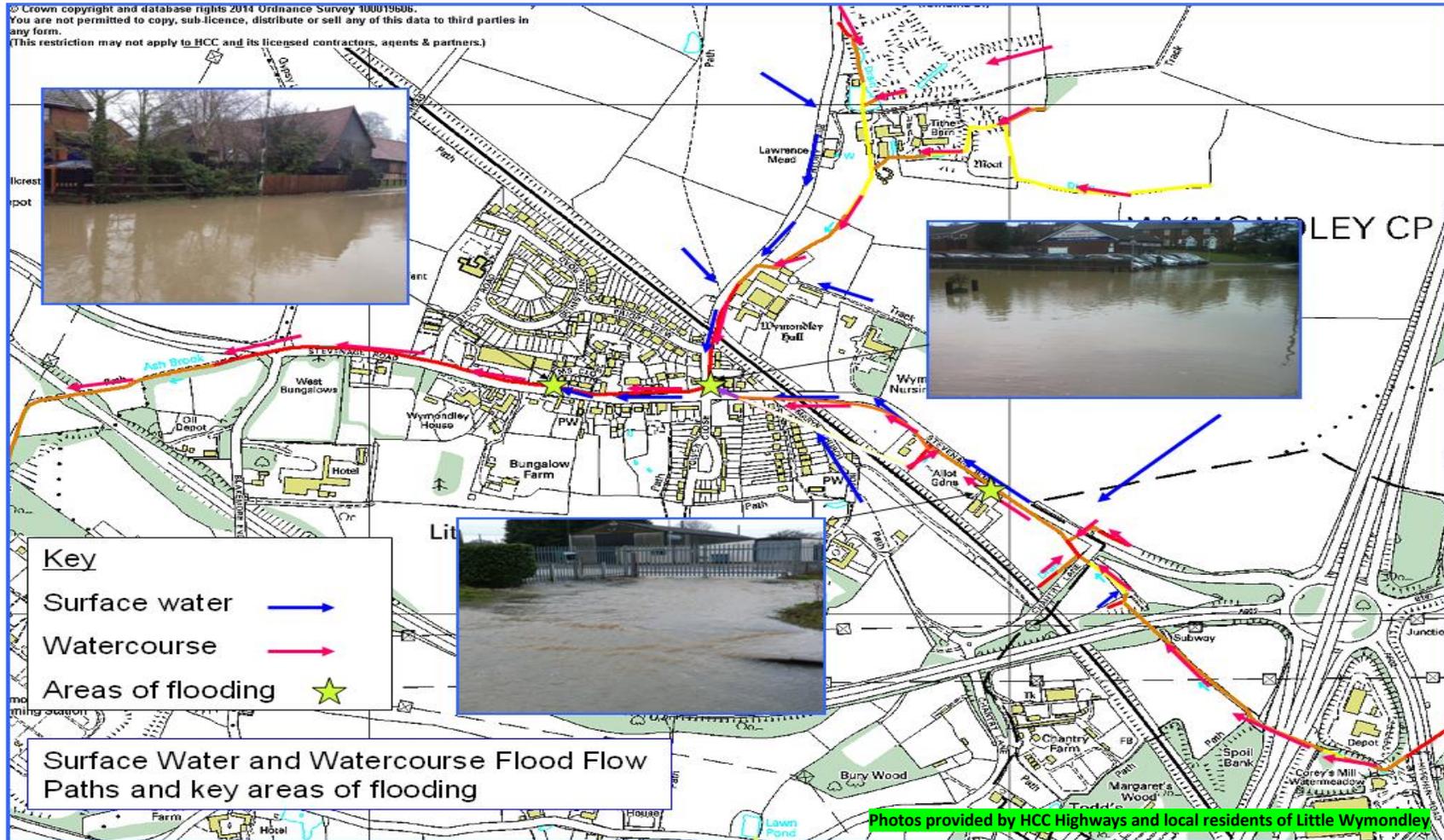
Yours faithfully,


 County Surveyor.

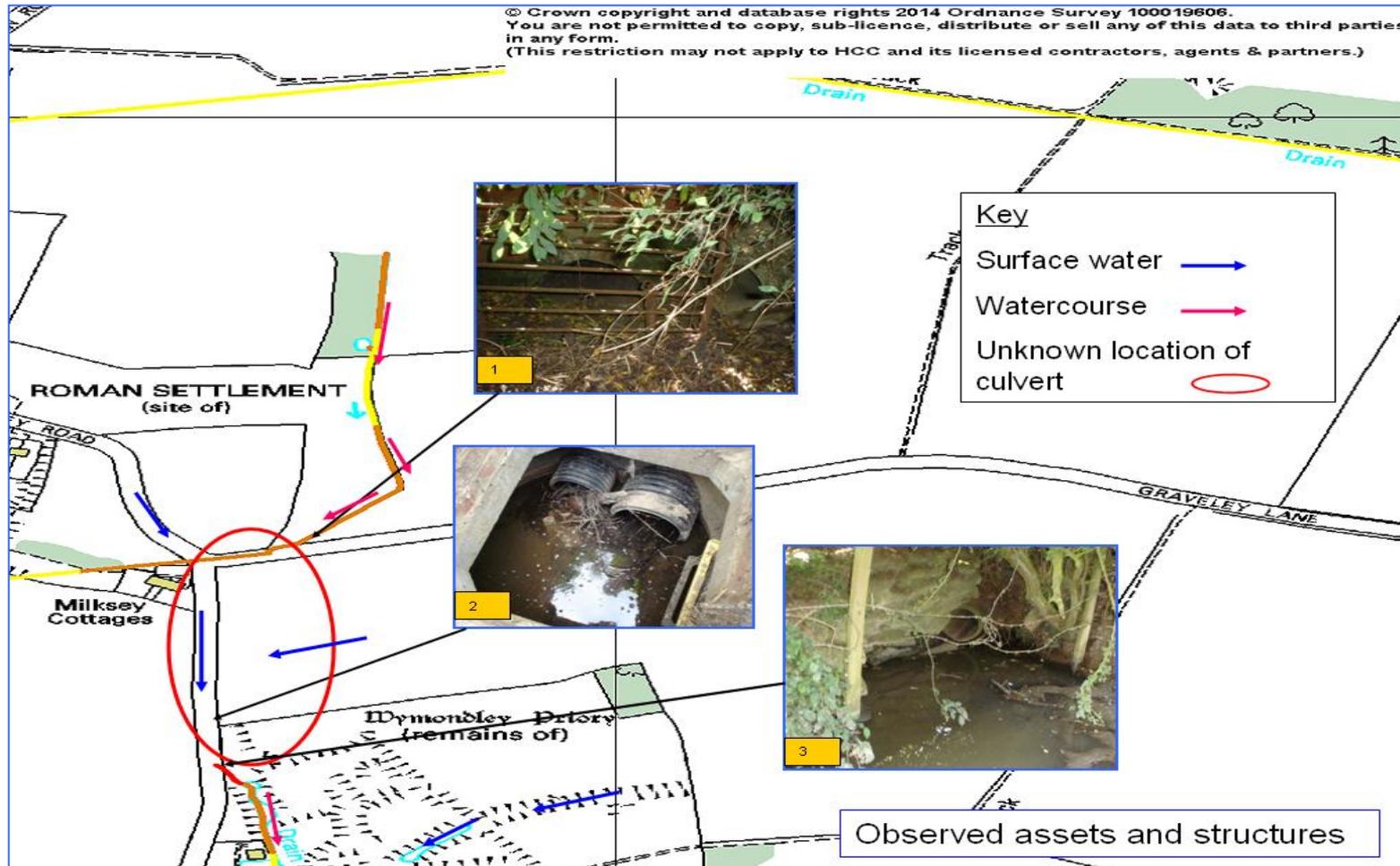
W. E. Doran, Esq., O.B.E., B.A.,
 M.I.C.E.,
 Engineer,
 Great Ouse Catchment Board,
 Alshurst,
 Brooklands Avenue, Cambridge.



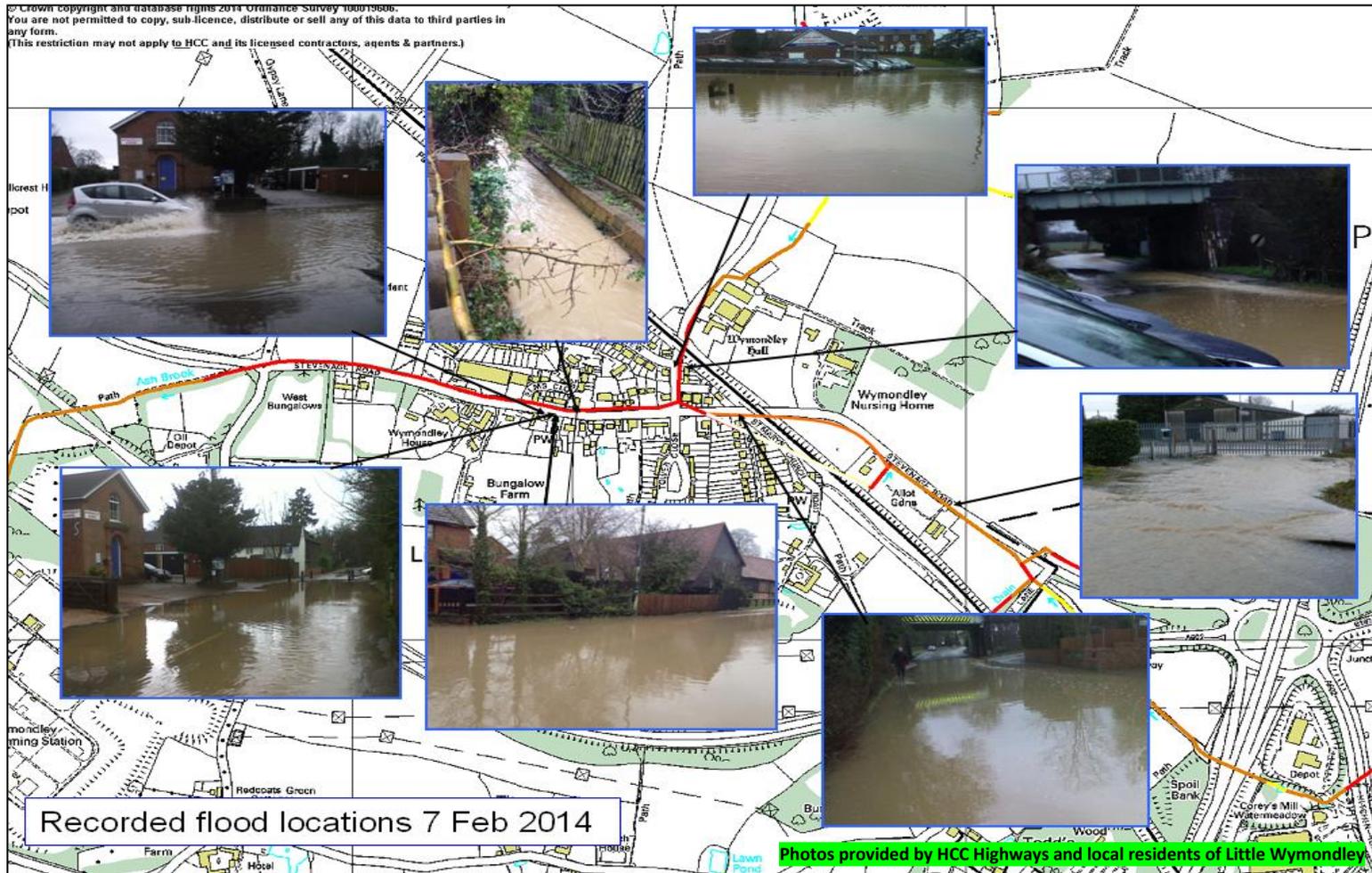
Appendix 3a Observations of flood flows



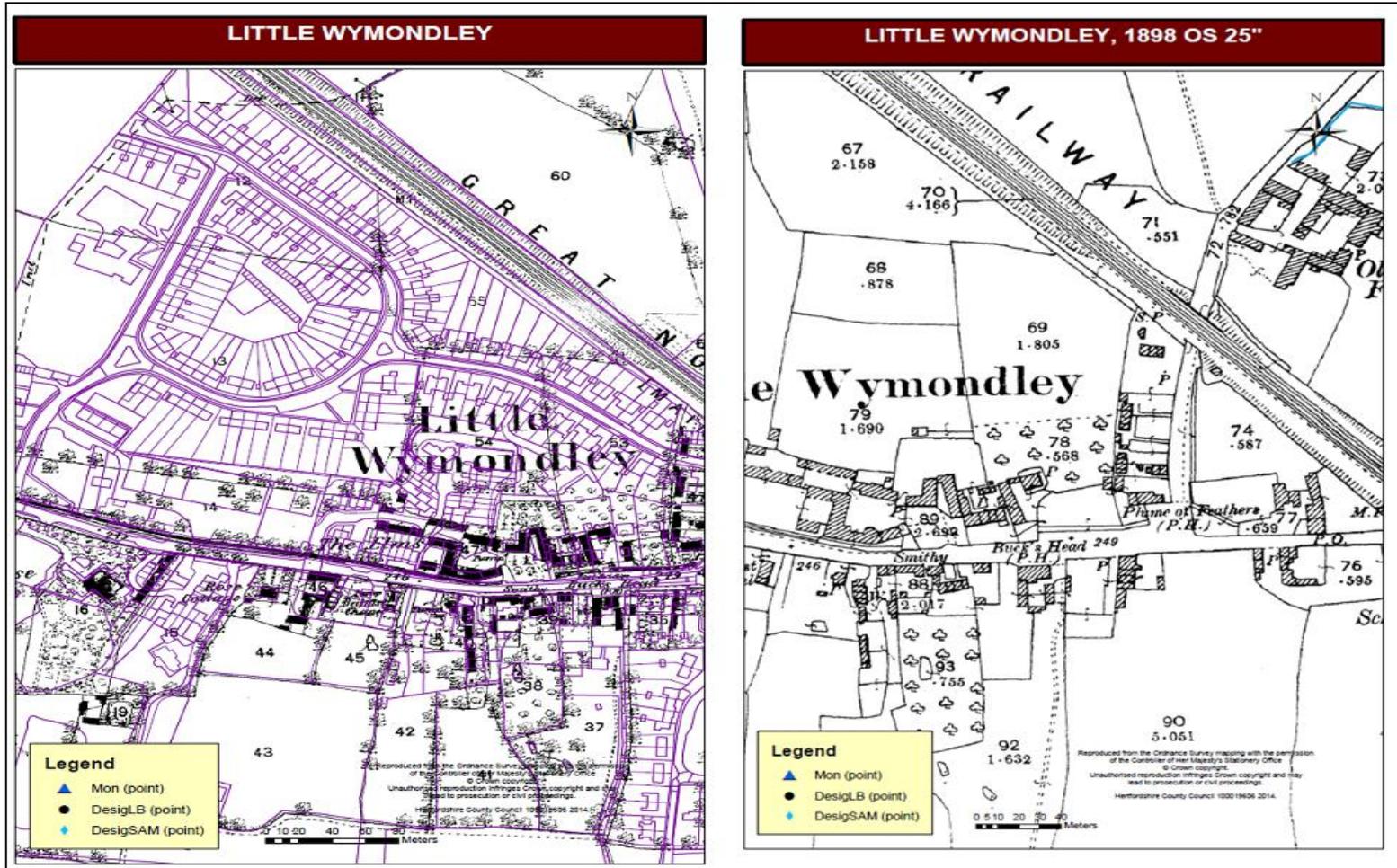
Appendix 3b Observation of flood flows



Appendix 4 Photos of 7 February 2014 flooding



Appendix 5a 1898 Maps of Little Wymondley overlain with current OS Maps



Appendix 5b 1898 map of Chantry Lane with current OS map

