



Norfolk County Council

Investigation Report into the flooding in Acle in 10th-13th June 2016

Report Reference: FIR026

Report prepared by Mark Ogden and Bethany Green on 20 September 2018



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Executive Summary

(a) Flooding incidents

This report covers the flooding that occurred in the parish of Acle during 2016. From 25 reports of flooding, eight were identified as being internal. The flooding to these eight properties all occurred on 13th June 2016. The properties affected were divided between two catchments¹ and situated on two roads, Beighton Road and New Road. Other isolated reports were received outside of these. In the Beighton Road catchment 14 properties reported flooding and in the Acle catchment nine properties reported flooding.

The flooding that occurred on both Beighton Road and New Road was caused by a combination of surface run-off flow paths; surface run-off from roads; entry of flood water into property; surface water washed off public highway by vehicles; properties had structural issues. It was also reported by residents that the drainage system or outfall was blocked, unmaintained, damaged or obstructed which led to surcharging of the drainage system.

There was one previous report of internal flooding in this area which was also located on New Road.

(b) Flooding causes

As the flooding occurred in two different catchments the causes are not completely concordant between the sites. This is particularly true when considering the different run-off characteristics between the more highly urbanised catchment of Acle and the more rurally-dominated catchment of Beighton Road. More detail on the causes of flooding at the individual catchment level can be found in the relevant sections of this report however some of the key trends of the rainfall event of the 13th June have been summarised below:

- Rainfall throughout the day combined with a particularly intense period of downfall that lasted roughly 45 minutes put the drainage network under stress.
- Runoff from the road featured in many of the cases. Highways acted as overland flow paths for the heavy rain.
- In many cases the camber of the road was such that water travelled from the road to the entrances of buildings.
- Passing vehicles created a wash that pushed excess water into properties through low thresholds.
- The capacity of surface water drainage including land drains, surface water highway drainage and private property surface water drainage was exceeded due to the significant levels of rainfall. This caused surcharging of the network elsewhere as the system was unable to cope with large volumes of water.

¹ **What are catchments?** - To aid the investigation process and, for ease of presentation, the incidents of flooding have been grouped within this document based on hydrological catchments. The purpose of viewing flooding incidents based on catchments reflects the reality that flooding does not respect the administrative boundaries of water management organisations. Hydrological catchments catch water and discharge it at locations known as outlets. Individual hydrological catchment boundaries are usually formed by ridges of surrounding higher ground, which separate the lower lying areas at a line known as a watershed.

- Flood water entered properties through the unprotected structure of the building via features such as low thresholds at entrances, unprotected air bricks, and services conduits.
- Run off from the waterlogged field added to the volume of water on the road.

(c) Recent rainfall in the area

This report seeks to draw on rainfall data to ascertain the intensity of the rainfall events experienced in the catchment that led to the flooding. This analysis is useful in assessing (in broad terms) if the design capacity of drainage systems within the affected areas was exceeded.

Norfolk County Council has sought to use data from rain gauges where incidents of flooding are located within a 2.5 km radius of the instrumentation. This distance meets the requirements of British Standards and aims to capture localised rainfall patterns. Where there is no available data within this radius this will be stated.

All of the incidents (100%) of internal flooding in this catchment are within 2.5km of a rain gauge. The rainfall events recorded by the relevant gauge for these catchment showed that on 13th June 2016, 14.2mm of rainfall was recorded as falling in 1 hour and 15 minutes at the ACLE S WKS (TELEM) rainfall monitoring station. The rain gauge recorded some smaller rainfall events in the two days preceding the flooding event and for the weeks following however the readings are not significant enough to include here. This intensity of rainfall for the total duration of the storm event on the 13th June equates to a 1 in 2 year rainfall event.

The Environment Agency estimated that the station was under recording by at least 23% due to the fact that the TBR filter funnel at this time was blocked with fine matter. Although no water was being held in the funnel at that time, it must be noted that there was also an accumulation of grass in the funnel. These factors may have affected the results from the rain gauge and give an inaccurate representation of the rainfall at the time. Therefore the quality of the data has been graded as 'suspect' and must be treated with caution as it is unlikely to have given the full picture of the storm event.

(d) Key recommendations

The recommendations set out in the report have been summarised below. Specific recommendations for each individual catchment are set out within the report. Please note a large number of these recommendations have already been followed up by the respective organisations identified. Progress against these recommendations will be assessed as part of an addendum to this report to be undertaken a year from the date of publication of this report.

All Risk Management Authorities should;

- Communicate with affected residents where their assets have given rise to the flooding of properties.
- Review the appropriateness of their response to flooding.
- Determine the integrity and/or capacity of their assets and their maintenance where they have contributed to the flooding of properties to understand the systems role in accommodating rainfall events as well as mitigating flooding.

Property owners of affected properties should;

- Confirm the integrity, capacity and appropriateness of their property drainage
- Determine if works are needed to remove the risk posed by structures that form obstructions to flows.
- Determine if it is appropriate for them to protect their buildings through flood protection measures.
- Seek their own legal advice if they are concerned about the responsibilities and liabilities of themselves and/or others.
- All property owners should remove any inappropriate surface water connections to the foul sewer system and direct flows to alternative points of discharge where it doesn't increase flood risk.

Norfolk County Council should;

- Work with property owners to assess the road structure to identify if it could be amended to route flood water away from the affected properties to alternative points of discharge, or other solutions as practicable.
- Determine if works are needed to remove the risk posed by obstructions to watercourse flows, such as blocked culverts, and communicate with affected parties and riparian owners.

Anglian Water should;

- Work with partner organisations to identify the potential for managing the amount of surface water entering their drainage system in flood events.

Broadland District Council should;

- Review their approach to the use of their permissive powers to maintain watercourses under the Land Drainage Act 1991.

Update to the flooding in Acle since 2016

As a result of the high volume of flooding experienced in Acle in 2016, and the ongoing historical flooding issues in the area, two schemes were implemented by Norfolk County Council Highways in the centre of Acle to reduce internal flooding to properties and businesses. These were located on New Road and Old Road and were constructed in 2017. Particularly pertinent to this flood report are the works on New Road which were designed to replace the existing systems to the north and south of New Road which could not cope with the high volume of surface water running through them. The installation of a carrier pipe has increased the capacity approximately fourfold and relieved some of the pressure on the drainage network. Similar works were carried out further up the catchment on Old Road, with analogous results.

Since the events recorded in this report there have been no more reports of internal flooding made to the LLFA in either 2017 or 2018. There have been eight more reports of external flooding made to Norfolk County Council however according to the LLFA criteria these do not qualify for formal flood investigation and therefore will not be explored further in this report.

Legend

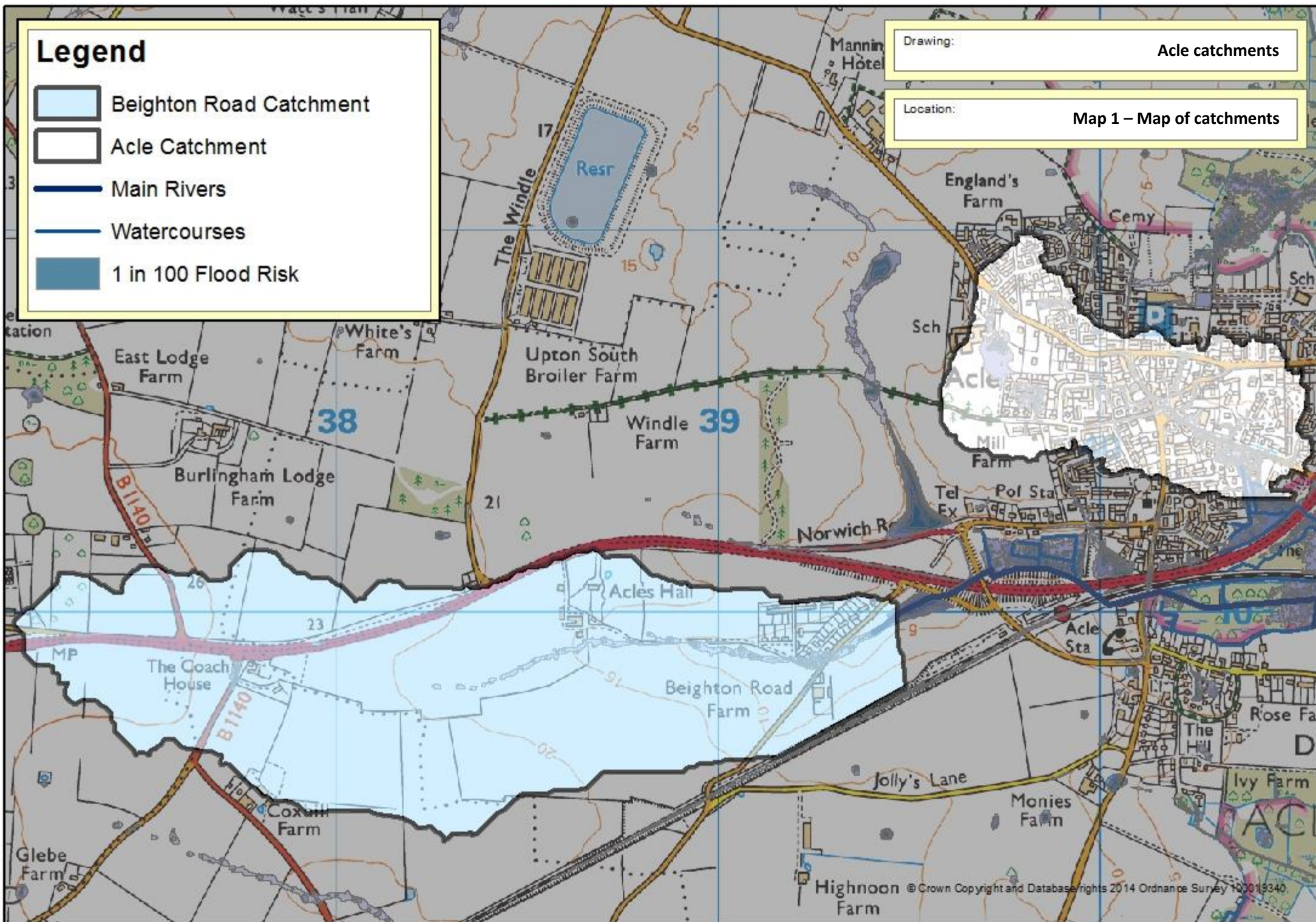
-  Beighton Road Catchment
-  Acle Catchment
-  Main Rivers
-  Watercourses
-  1 in 100 Flood Risk

Drawing:

Acle catchments

Location:

Map 1 – Map of catchments



Justification for Flood Investigation

The purpose of this report relates to Section 19 of the Flood and Water Management Act 2010. This legislation sets out that the County Council, in its role as Lead Local Flood Authority for Norfolk, should investigate the role and response of organisations to significant flooding incidents. Significant flooding is deemed to be those incidents that impact upon people, property and infrastructure.

The Norfolk Local Flood Risk Management Strategy Policy UC2 (Flood Investigation) sets out the thresholds the Lead Local Flood Authority will apply to its formal flood investigation role. This states an investigation will be undertaken where it is determined that;

- (a) There is ambiguity surrounding the source or responsibility for a flood incident, and/or;
- (b) There is cause to investigate the flood incident, due to either its impact, or consequence

In judging the impact or consequence of a flood event Norfolk County Council uses the criteria set out below;

- Any risk to loss of life or serious injury.
- One or more residential or business property flooded internally.
- One or more critical services/installations and vulnerable person's properties flooded internally; and/or rendered inoperable or their functions severely compromised due to the access to the premises being impassable; and/or resulting in a loss of service impacting on the local community.
- Any section of a national category 3 road or above made impassable due to flooding; and/or flooding to priority 1 and 2 gritting routes.
- Flooding adversely impacting a rail link by making it impassable.

It was deemed necessary to complete a formal Investigation Report into the flooding in Acle in 10th-13th June 2016 as:

- multiple residential properties were internally flooded.
- one commercial property was internally flooded.

This impact met Norfolk County Council's threshold for triggering the undertaking of a formal flood investigation.

The flood investigation report aims to:

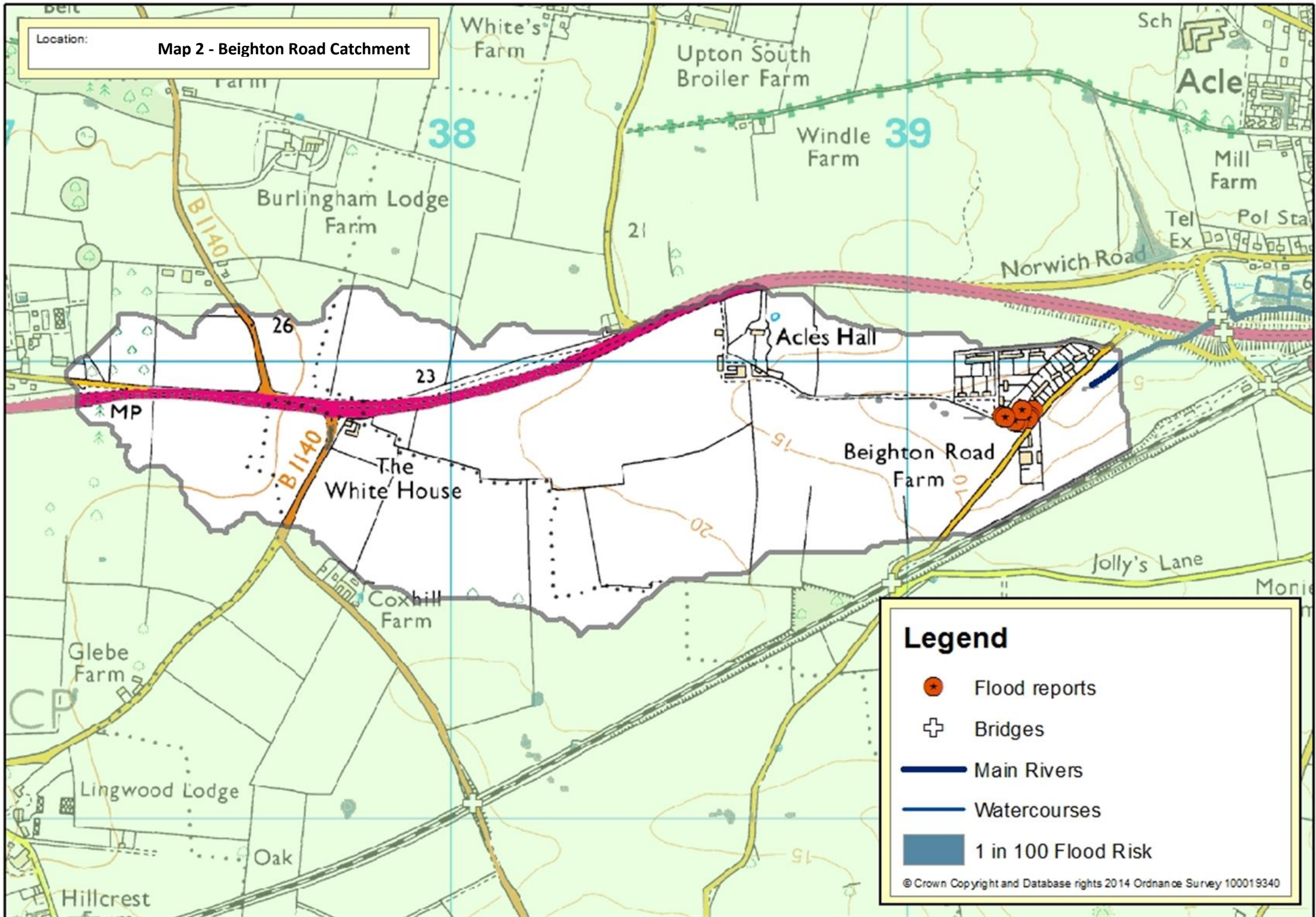
- provide a transparent and consistent review of recent flooding.
- identify those organisations and individuals who have responsibility to manage the causes of the flooding.
- identify what their response has been or will be to the flooding.
- make recommendations as to how the flood risk could be mitigated or reduced.
- provide new evidence of the level of risk faced by communities in Norfolk that can be used in current funding bids in support of flood mitigation schemes.

Mitigation measures include property level protection: reinstating lost drainage features: reviewing or increasing maintenance regimes and increasing the capacity of the drainage network.






The flood investigation report cannot:

- Resolve the flooding issues or provide designed solutions.
- Force authorities to undertake any of the recommended actions.

Location: **Map 2 - Beighton Road Catchment**



Legend

-  Flood reports
-  Bridges
-  Main Rivers
-  Watercourses
-  1 in 100 Flood Risk

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Flooding and flood risk within the Beighton Road catchment

Description of catchment

Largely rural agricultural land on the outskirts of Acle which flows west to east. All the flood reports are located at the eastern end of the catchment.

Flood Risk within the catchment

The flood risk from local sources (ordinary watercourses and surface run-off) and strategic sources (fluvial above 3 square km and the sea) of flooding within this catchment has been assessed. The number of properties at risk are set out in the table below for two different risk bandings, the 1 in 30 year event and the 1 in 100 year event. This assessment does not take into account flood risk from groundwater or reservoir failure.

Flood Risk Data Source	Critical Services	Residential	Non-residential
[a] No. of properties subject to surface water flood risk at 1 in 30 year event:	0	0	0
[b] No. of properties subject to surface water flood risk at 1 in 100 year event:	0	6	0
[c] No. of properties subject to flood risk from rivers and the sea at 1 in 30 year event:	0	0	0
[d] No. of properties subject to flood risk from rivers and the sea at 1 in 100 year event:	0	0	0
[e] No. of properties only subject to both flood risk from surface water and rivers and the sea (combined risk) at 1 in 30 year event:	0	0	0
[f] No. of properties only subject to both flood risk from surface water and rivers and the sea (combined risk) at 1 in 100 year event:	0	0	0

Historic flooding incidents within the catchment

There were no historic flood events within the catchment.

Flood incidents within this catchment

Within this catchment 14 reports of external and internal flooding have been received. Out of these 14 reports, seven incidents of internal flooding have been confirmed and assessed as part of this investigation. These incidents are detailed in the table below.

Incident as reported	What was the response to the flood incident
<p>On the 13/06/2016 - 7 properties were internally flooded on Beighton Road, Acle. These incidents were confirmed by:</p> <ul style="list-style-type: none"> ➤ a member of the public via personal communication on the 22 November 2016, (FWF/16/5/3740); (FWF/16/5/3742) ➤ Broadland District Council via email correspondence on the 14 June 2016, (FWF/16/5/2752); (FWF/16/5/2753); (FWF/16/5/2756); (FWF/16/5/2757) ➤ Norfolk County Council (Lead Local Flood Authority) via personal communication on the 22 November 2016, (FWF/16/5/3744) 	<p>Norfolk County Council (Lead Local Flood Authority) visited affected residents to offer advice and to gather information after the incident.</p> <p>British Red Cross carried out measures to minimise the impact of flooding during the incident.</p> <p>The Fire and Rescue Service responded and pumped out during the incident.</p>

Causes of flooding within the catchment and recommendations

The findings of the investigation are detailed on the following pages. The first table details the causes that led to flooding within the catchment as well as when and where they were experienced. It also sets out which Risk Management Authorities have responsibility to help manage the causes of the flooding. The second table sets out recommendations to mitigate the causes and impacts of the flooding experienced within this catchment.

Following flooding to people, property and infrastructure;

- Risk Management Authorities should
 - communicate with affected residents where their assets have given rise to the flooding of properties.
 - review the appropriateness of their response to flooding.
 - Determine the integrity and/or capacity of their assets where they have contributed to the flooding of properties to understand the systems role in accommodating normal rainfall events as well as mitigating flooding.
- Property owners of affected properties should seek their own legal advice.
- NCC should
 - incorporate all relevant information of actual flooding into the review of the Norfolk Preliminary Flood Risk Assessment (“PFRA”).
 - review and monitor the delivery of recommendations within this and other relevant flood investigation reports.

Flooding experienced at / on	Causes of flooding	Who has responsibilities to manage the cause(s) of the flood?
Beighton Road, Acle, 13/06/2016	Run-off from significant rainfall pooled at a low point within the catchment affecting properties.	Property Owners
	Surface run-off flowed from the highway due to the camber of the road onto the access of the properties, which contributed to the flooding of the affected properties.	Property Owners, Norfolk County Council
	Significant rainfall was concentrated on the highway. Vehicles using the highway passed through the flood water causing it to wash towards the affected properties.	Property Owners, Norfolk County Council
	Run-off from the rainfall was directed towards the surface water drainage network. These flows could not be accommodated as the system was already overloaded. This directed flood water towards the affected properties. This was due to the infiltration of surface into existing drainage networks.	Property Owners, Norfolk County Council Land Owners
	Significant rainfall was directed into the surface water system causing it to surcharge elsewhere. This surcharging contributed to the flooding at the affected properties.	Property Owners, Norfolk County Council
	The flood water entered the properties through low thresholds at entrances.	Property Owners
	One of the affected properties had structural issues that did not cope with heavy rainfall and caused a sink hole to open up at the front.	Property Owners
	The drainage system was poorly maintained and partially obstructed by debris or silt. This reduced the efficiency of the upstream drainage system contributing to flooding at the affected properties.	Norfolk County Council Broadland District Council

Flooding experienced at / on	Recommendation	Who has responsibility to follow up the recommendation?	Timescale
Beighton Road, Acle, 13/06/2016	Norfolk County Council will work with partner organisations to identify funding for flood mitigation. This would include assessing the potential to install property level protection measures or schemes to reduce flow such as Natural Flood Management techniques. Property owners could also carry out their own measures where funding is not forthcoming or residents are unwilling to wait for measures to be approved through national funding schemes.	Land owners Riparian owners Norfolk County Council Broadland District Council Environment Agency	12 months
	Norfolk County Council Highways will consider opportunities to route flood water on the highway away from affected properties to alternative points of discharge, or other solutions as practicable, if flood risk is not increased elsewhere in the catchment.	Norfolk County Council	12 months
	Property owners should protect their buildings through flood protection measures where appropriate. Norfolk County Council will communicate with local residents to advise them of the appropriate measures they could take to protect their property without prejudicing the rights and responsibilities of adjoining property holders.	Property owners	12 months
	Norfolk County Council will determine if works are needed to remove the risk posed by structures that form obstructions to watercourse flows and communicate with affected parties and riparian owners. Norfolk County Council would seek to remind riparian owners of their responsibility to undertake appropriate levels of maintenance to sustain the efficiency of the drainage systems.	Norfolk County Council Broadland District Council	12 months

Beighton Road – internal and external flooding experienced 13th June 2016.

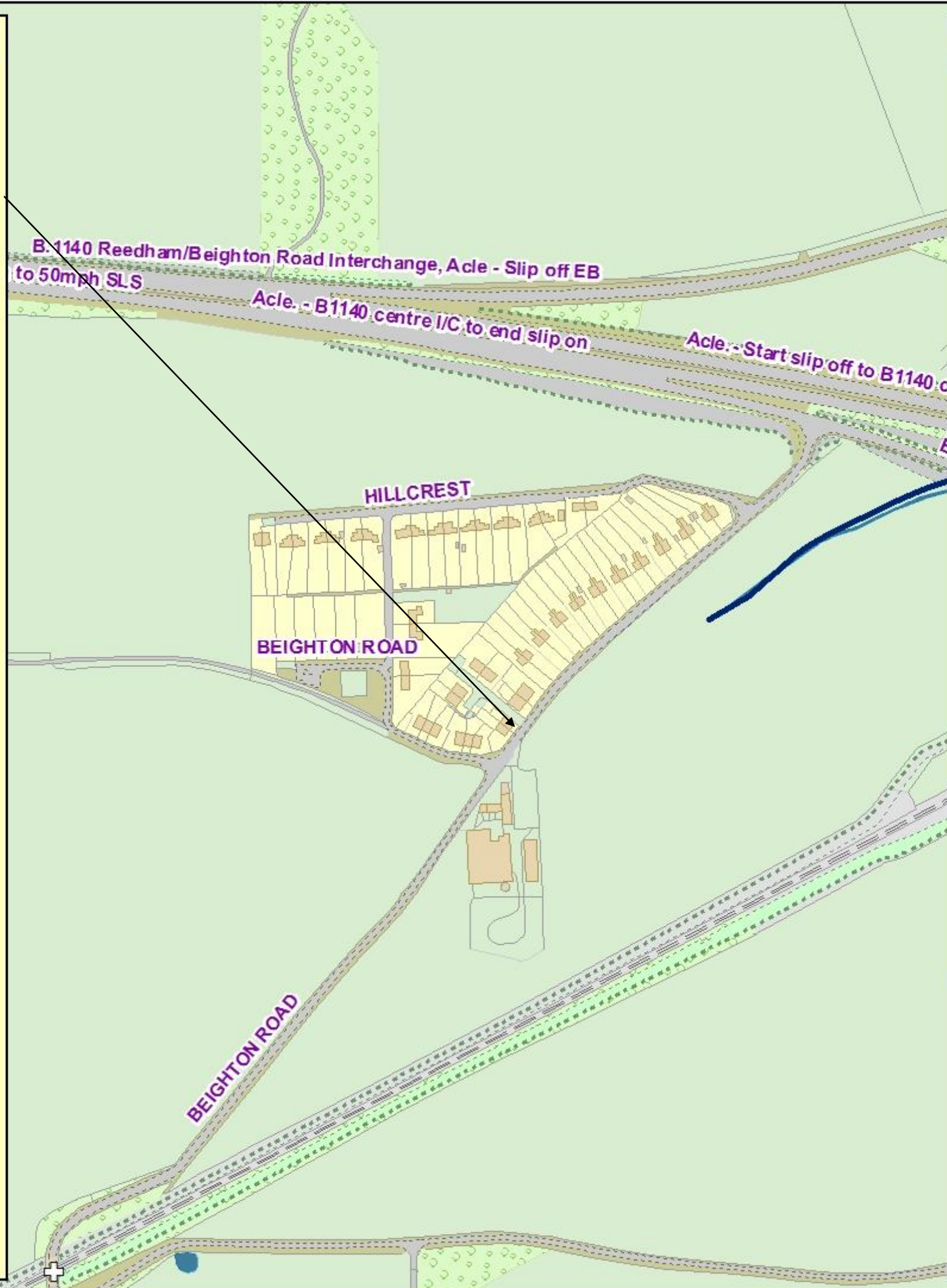
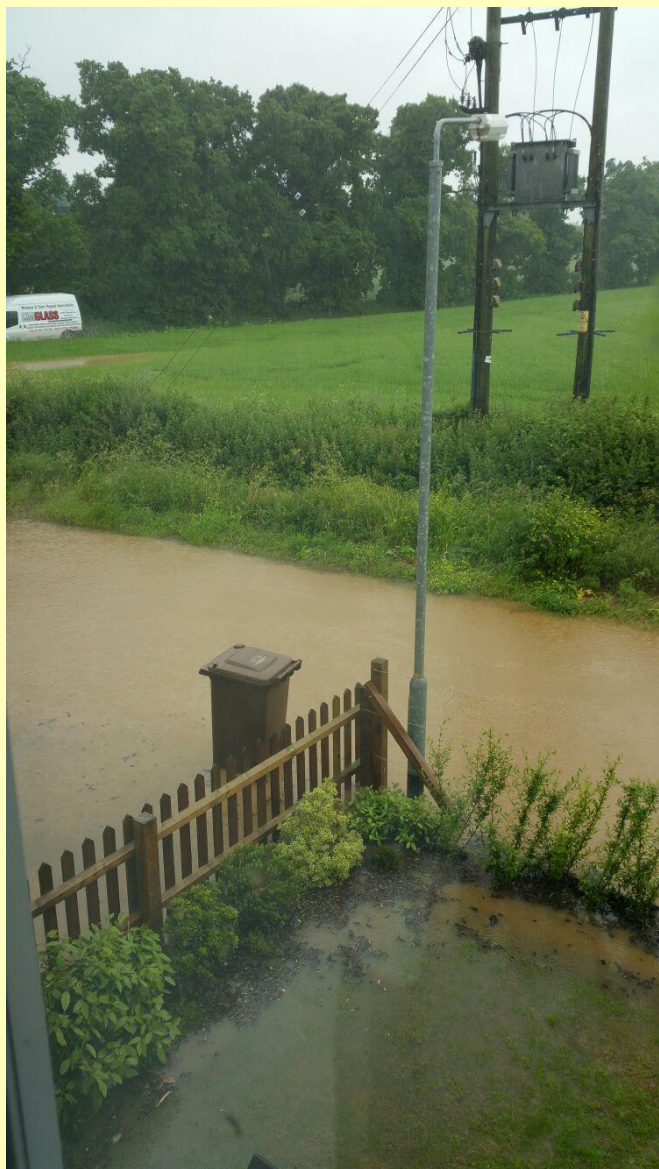
Causes

Run-off causing pooling at low points in the catchment.

Surface run-off from the highway was directed towards the houses and exacerbated by vehicles which created a wash and pushed more water towards the houses.

Run-off from the rainfall was directed towards the surface water drainage network which was already at full capacity and caused it to be overloaded.

One of the properties had structural issues which was susceptible to the heavy rainfall.



Recommendations - Norfolk County Council will look for funding for individual property level protection and advise residents on appropriate measures. Meanwhile, property owners should protect their buildings where funding is not forthcoming.







Norfolk County Council will determine if other measures to reduce flow such as Natural Flood Management would be appropriate and /or routing flood water on the highway away from affected properties to alternative points of discharge.



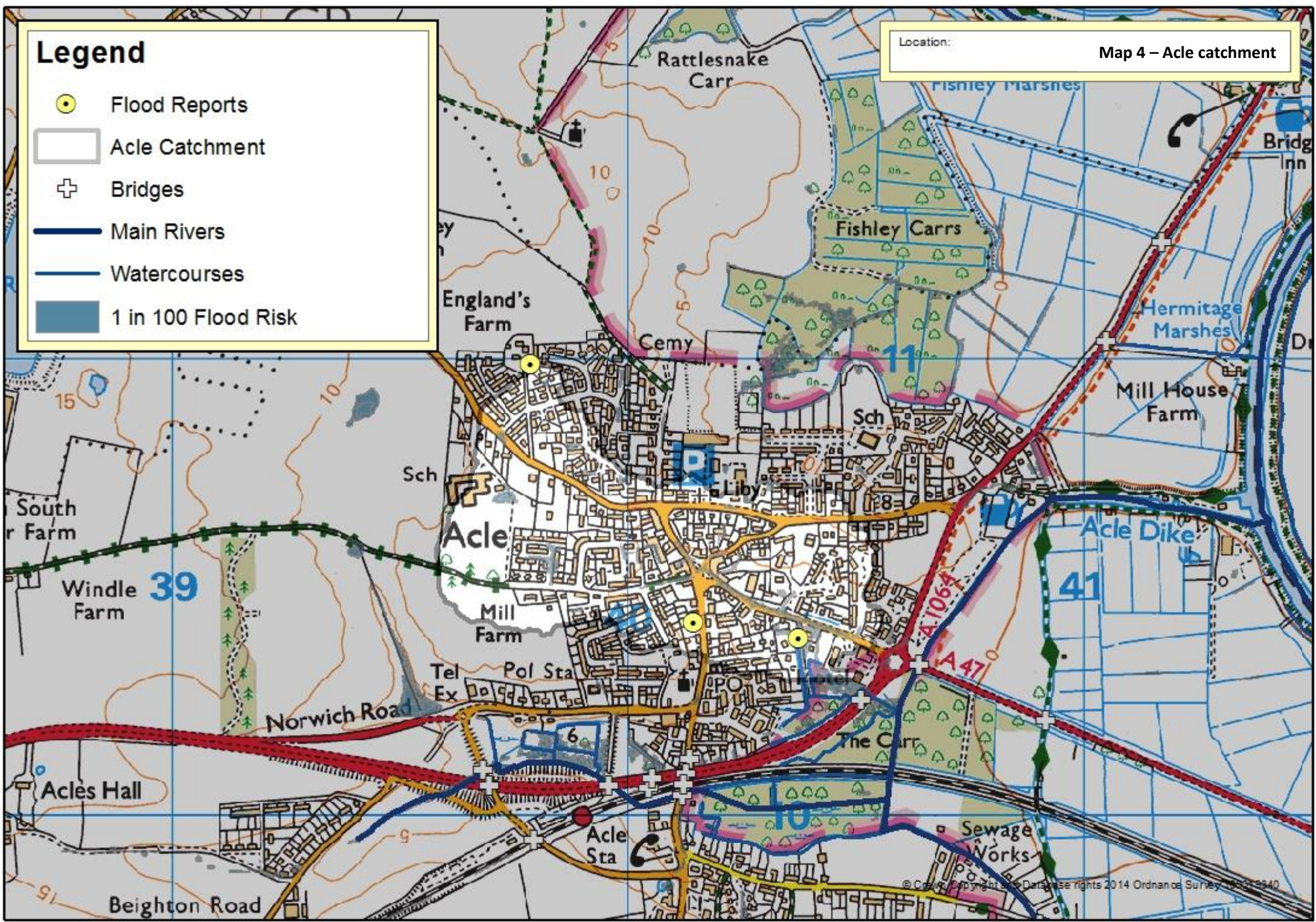
Legend

- ⊕ Bridges
- Watercourses
- Main Rivers
- Water bodies

Legend

-  Flood Reports
-  Acle Catchment
-  Bridges
-  Main Rivers
-  Watercourses
-  1 in 100 Flood Risk

Location: **Map 4 – Acle catchment**



Flooding and flood risk within the Acle catchment

Description of catchment

Largely urban development but with more rural coverage towards the edge, this catchment covers most of the town of Acle. Water moves west to east, outfalling at Acle Dyke to the southeast of the catchment and where the highest concentration of flood reports are located.

Flood Risk within the catchment

The flood risk from local sources (ordinary watercourses and surface run-off) and strategic sources (fluvial above 3 square km and the sea) of flooding within this catchment has been assessed. The number of properties at risk are set out in the table below for two different risk bandings, the 1 in 30 year event and the 1 in 100 year event. This assessment does not take into account flood risk from groundwater or reservoir failure.

Flood Risk Data Source	Critical Services	Residential	Non-residential
[a] No. of properties subject to surface water flood risk at 1 in 30 year event:	0	22	3
[b] No. of properties subject to surface water flood risk at 1 in 100 year event:	0	41	14
[c] No. of properties subject to flood risk from rivers and the sea at 1 in 30 year event:	1	17	4
[d] No. of properties subject to flood risk from rivers and the sea at 1 in 100 year event:	1	17	4
[e] No. of properties only subject to both flood risk from surface water and rivers and the sea (combined risk) at 1 in 30 year event:	0	2	1
[f] No. of properties only subject to both flood risk from surface water and rivers and the sea (combined risk) at 1 in 100 year event:	0	2	2

Flood incidents within this catchment

Within this catchment 9 reports of external and internal flooding have been received. Out of these 9 reports, 1 incident of internal flooding has been confirmed and assessed as part of this investigation. This incident is detailed in the table below.

Incident as reported	What was the response to the flood incident
On the 13/06/2016 - 1 property was internally flooded on New Road, Acle. This incident was reported by Broadland District Council via email correspondence on the 13 June 2016, (FWF/16/5/2740)	The Fire and Rescue Service responded and pumped out during the incident.

Historic flooding incidents within the catchment

The following table lists flooding incidents within the catchment that have been recorded:

Date of incident	Impact	Rainfall intensity
27/06/2014	Internal flooding to three premises on New Road, Acle.	Unknown

Causes of flooding within the catchment and recommendations

The findings of the investigation are detailed on the following pages. The first table details the causes that led to flooding within the catchment as well as when and where they were experienced. It also sets out which Risk Management Authorities have responsibility to help manage the causes of the flooding. The second table sets out recommendations to mitigate the causes and impacts of the flooding experienced within this catchment.

Following flooding to people, property and infrastructure;

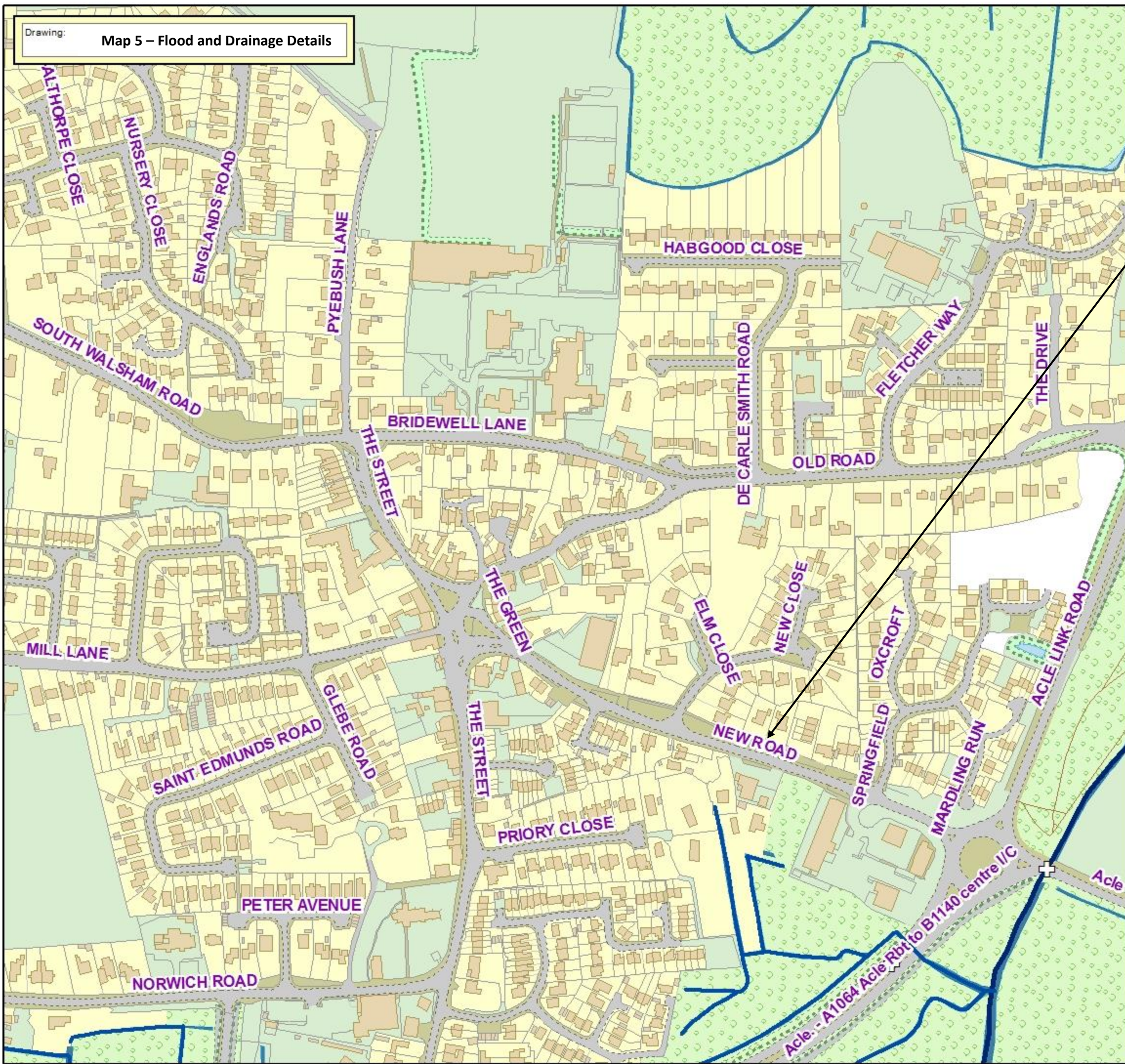
- Risk Management Authorities should
 - communicate with affected residents where their assets have given rise to the flooding of properties.
 - review the appropriateness of their response to flooding.
 - Determine the integrity and/or capacity of their assets where they have contributed to the flooding of properties to understand the systems role in accommodating normal rainfall events as well as mitigating flooding.
- Property owners of affected properties should seek their own legal advice.
- NCC should
 - incorporate all relevant information of actual flooding into the review of the Norfolk Preliminary Flood Risk Assessment (“PFRA”).
 - review and monitor the delivery of recommendations within this and other relevant flood investigation reports.

Flooding experienced at / on	Causes of flooding	Who has responsibilities to manage the cause(s) of the flood?
New Road, Acle, 13/06/2016	Surface run-off flowed from the roads due to the camber of the road onto the access of the property, which contributed to the flooding of the affected property.	Norfolk County Council Property Owners
	The surface water drainage system was partially obstructed by debris or silt. This reduced the efficiency of the upstream drainage system contributing to flooding at the affected properties.	Norfolk County Council
	Significant rainfall was directed into the foul system causing it to surcharge elsewhere. This surcharging contributed to the flooding at the affected properties.	Norfolk County Council Anglian Water
	The flood water entered the properties through low thresholds at entrances.	Property Owners

Flooding experienced at / on	Recommendation	Who has responsibility to follow up the recommendation?	Timescale
New Road, Acle, 13/06/2016	Norfolk County Council Highways will consider opportunities to route flood water on the highway away from affected properties to alternative points of discharge, or other solutions as practicable, if flood risk is not increased elsewhere in the catchment.	Norfolk County Council	12 months
	Anglian Water should work with partner organisations to identify the potential for managing the amount of surface water entering their drainage system in flood events.	Anglian Water Property Owners	12 months
	Property owners should protect their buildings through flood protection measures where appropriate. Norfolk County Council will communicate with local residents to advise them of the appropriate measures they could take to protect their property without prejudicing the rights and responsibilities of adjoining property holders.	Property Owners Norfolk County Council	12 months

Drawing: **Map 5 – Flood and Drainage Details**

Location: **Acle Catchment**



New Road - internal and external flooding experienced 13th June 2016.

Causes

Run-off from significant rainfall was concentrated along overland flow paths on which the affected property is positioned.

Surface run-off flowed from the roads due to the camber of the road onto the access of the property, which contributed to the flooding of the affected property.

The surface water drainage system was partially obstructed by debris or silt. This reduced the efficiency of the upstream drainage system contributing to flooding at the affected properties.

Recommendations

Property owners should protect their buildings through flood protection measures where appropriate. Norfolk County Council will communicate with local residents to advise them of the appropriate measures they could take to protect their property without prejudicing the rights and responsibilities of adjoining property holders.

Anglian Water should work with partner organisations to identify the potential for managing the amount of surface water entering their drainage system in flood events.

Legend

- ⊕ Bridges
- Watercourses
- Main Rivers
- Water bodies

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Disclaimer

Although every effort has been taken to ensure the accuracy of the information contained within the pages of the report, we cannot guarantee that the contents will always be current, accurate or complete.

This report has been prepared as part of Norfolk 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.

The opinions, conclusions and any recommendations in this Report are based on assumptions made by Norfolk County Council when preparing this report, including, but not limited to those key assumptions noted in the Report, including reliance on information provided by third parties.

Norfolk 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 and Norfolk 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.

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.

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Appendix A - Key definitions and responsibilities

What is flooding?

Section 1 of the Flood and Water Management Act 2010 states that: "Flood" includes any case where land not normally covered by water becomes covered by water. In addition, this section adds the caveat: "But "flood" does not include – (a) a flood from any part of the sewerage system, unless wholly or partly caused by an increase in the volume of rainwater (including snow and other precipitation) entering or otherwise affecting the system, or (b) a flood caused by a burst water main (within the meaning given by Section 219 of the Water Industry Act 1991)."

What is internal and external flooding?

For the purposes of this report, properties that have internally flooded are those where it is considered that water has entered the fabric of the building;

- Basements and below 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.
- Occupied caravans are included but not tents.

External flooding included those properties where water has entered gardens or surrounding areas which restricts access, affects the highway 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.

What is Local Flood Risk?

Local Flood Risk is defined by the Flood and Water Management Act 2010 as being flood risk from surface runoff, groundwater and ordinary watercourses.

- 'Surface runoff' means rainwater (including snow and other precipitation) which is on the surface of the ground (whether or not it is moving) and, has not entered a watercourse, drainage system or public sewer.
- 'Groundwater' means all water which is below the surface of the ground and in direct contact with the ground or subsoil.
- 'Ordinary Watercourse' means a watercourse that does not form part of a main river and includes a reference to a lake, pond or other area of water which flows into an ordinary watercourse.

Roles and Responsibilities of Risk Management Authorities

Below is a short summary of those groups and Risk Management Authorities ("RMAs") that have a role in managing flooding within Norfolk. The listing of responsibilities includes those duties or powers that directly relate to managing the flood incidents or consequence. All RMAs have a duty to cooperate with other RMAs.

1. Norfolk County Council (as Lead Local Flood Authority)

- Duty to investigate significant flooding from any source.
- Duty to maintain a register of structures or features which affect flood risk from all sources.
- Power to undertake works to manage flood risk from surface run-off and groundwater.
- Powers to regulate activities on ordinary watercourses outside of Internal Drainage Board areas.
- Duties as a Category 1 Responder for Emergency Planning and the Fire & Rescue Service.

2. District Councils

- Powers to undertake works on ordinary watercourses outside of IDB areas.

- The Local Planning Authority for their District area and determine the appropriateness of developments and their exposure and effect on flood risk.
- Duties as a Category 1 Responder for Emergency Planning.

3. Internal Drainage Boards (“IDBs”)

- A duty to act in a manner consistent with the national and local strategies and guidance when exercising FCERM functions.
- Duty to act in a manner consistent with Local Flood Risk Management Strategies when exercising other functions that may affect flood risk.
- Powers to regulate activities on ordinary watercourses within IDB areas.
- Exercise a general power of supervision over all matters relating to the drainage of land within their district.
- Powers to undertake works on ordinary watercourses within IDB areas.

4. Highway Authorities (Norfolk County Council / Highways England)

- Powers to undertake works to manage water on the highway and to move water off the highway.
- Enforcement powers to unauthorised alterations, obstructions and interferences with highway drainage.
- Have responsibilities for culverts vested in the highway. Currently NCC discharges its responsibilities associated with bridges and culverts (whether as owner or highway authority) through the inspection of condition (undertaken by the Bridges team) and through maintenance activity (delivered on a as needs basis by the relevant Highways area team).

5. Water Companies

- Undertake cost beneficial capital schemes to alleviate or eliminate flooding where the flood event is associated with a failure of their assets.
- Duty to provide, improve, maintain and operate systems of public sewers and works for the purpose of effectually draining an area.
- Are responsible for flooding from their foul, combined and surface water sewers, and from burst water mains.
- Maintain ‘At Risk Registers’ for Ofwat that record properties that have flooded from public foul, combined and surface water sewers and that are at risk of flooding again.
- Water companies respond to reports from the public of flooding associated with their assets and determine an appropriate response in line with their standards or customer service.
- Duties as a Category 2 Responder for Emergency Planning.

6. Riparian Owners

- Duty of care towards neighbours upstream and downstream, avoiding any action likely to cause flooding.
- Entitled to protect their properties from flooding.
- May be required to maintain the condition of their watercourse to ensure that the proper flow of water is unimpeded.