Norfolk County Council

Investigation Report into the Countywide Flooding of Summer 2021

Report Reference: FIR 067

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Executive Summary

This report summarises the causes and recommendations in relation to flooding for fifteen rainfall events occurring between May and September 2021. The source of flooding was predominately surface water entering properties either via overland flow paths or from drainage systems, although foul flooding was also experienced by some properties.

Flooding Incidents and Causes

The flooding that occurred in the locations listed below led to the reported internal flooding of 65 properties. Key causes of flooding vary between the locations and are summarised throughout this report. Common causes between properties include surface water flow from fields, entering properties through low thresholds, overloading surface water drainage systems and infiltrating into foul systems causing flooding.

Location	Sub Catchment	Number of affected properties
Gorleston	Gorleston	9
Great Yarmouth	Yarmouth	1
Norwich	Norwich Central	26
Norwich	Lakenham	1
Norwich	Unthank	1
Sprowston	Sprowston	3
Thetford	Maine Street and Coney Close	1
Thetford	Newtown	3
Thetford	Abbey Estate East	3
Thetford	Fison Way to Cloverfields	2
Mundford	Mundford	1
Watton	Watton	1
Ashby St. Mary	Ashby St. Mary	1
Loddon	Loddon	1
Tasburgh	Tasburgh	1
Ryburgh	Ryburgh	3
Downham Market	Downham Market	1
Methwold	Methwold	1
Marham	Marham	2
Stoke Ferry	Stoke Ferry	1
King’s Lynn	West Lynn	1

Key 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 the following recommendations are made in three areas:

1. **Risk Management Authorities should:**

a) Communicate with affected residents where their assets have given rise to the flooding of properties.
b) Review the appropriateness of their response to flooding.
c) 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.

2. **Property owners of affected properties should seek their own legal advice.**

3. **Norfolk County Council should:**

a) Incorporate all relevant information of actual flooding into the review of the Norfolk Preliminary Flood Risk Assessment (PFRA).

b) Review and monitor the delivery of recommendations within this and other relevant flood investigation reports.

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:

1) There is ambiguity surrounding the source or responsibility for a flood incident, and/or
2) 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:

a) Any risk to loss of life or serious injury.
b) One or more residential or business property flooded internally.
c) 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.
d) 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.
e) Flooding adversely impacting a rail link by making it impassable.

In this instance it was deemed necessary to complete a formal investigation as multiple residential and business properties flooded internally.

This impact met the County Council's threshold for undertaking a formal flood investigation and the flood investigation report aims to:

i) Provide a transparent and consistent review of recent flooding.
ii) Identify those organisations and individuals who have responsibility to manage the causes of the flooding.
iii) Identify what their response has been or will be to the flooding.
iv) Make recommendations as to how the flood risk could be mitigated or reduced.
v) 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.

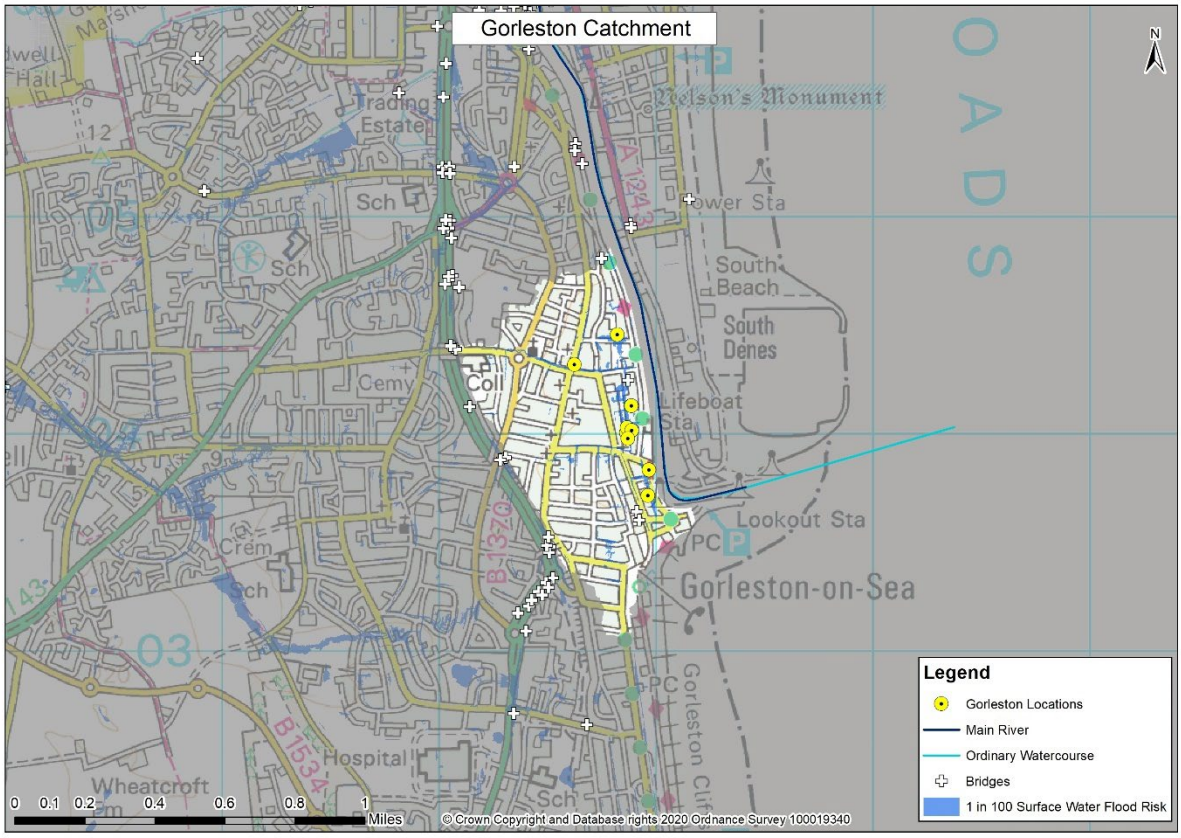
Mitigation measures include property level protection, reinstating lost drainage features, reviewing or increasing maintenance regimes and increasing the capacity of the drainage network.

The flood investigation report cannot:

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

Great Yarmouth Borough Council Area

Flooding and Flood Risk Within the Gorleston Catchment



Map showing location of flooded properties in Gorleston.

Description of Catchment

The catchment is a coastal urban one, with a high number of residential properties near to one another as well as having numerous commercial buildings located within it. Areas of green space are at a minimum, with the surface predominantly being metalled, including areas of car parking. The catchment is bounded by the River Yare to the east which in turn is separated via a sea wall.

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 consider flood risk from groundwater or reservoir failure.

Flood Risk Data Source	Critical Services	Residential	Non-residential
[a] Number of properties subject to surface water flood risk at 1 in 30-year event:	2	36	20
[b] Number of properties subject to surface water flood risk at 1 in 100-year event:	3	161	53
[c] Number of properties subject to flood risk from rivers and the sea at 1 in 30-year event:	0	0	2
[d] Number of properties subject to flood risk from rivers and the sea at 1 in 100-year event:	0	0	2
[e] Number 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] Number 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	1

Flood Incidents Within this Catchment

Within this catchment ten incidents of internal flooding have been assessed as part of this investigation. These incidents are detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
18/06/2021	On the 18/06/2021 - five properties were internally flooded on Bells Marsh Road, Gorleston. These incidents were reported by: a resident via an online flood report form on the 18 June 2021, (FWF/21/4844) and the media via an article on the 18 June 2021, (FWF/21/5121), (FWF/21/5217), (FWF/21/4845) & (FWF/21/5178).	The Fire and Rescue Service responded and pumped out during the incident. Norfolk County Council (NCC) as Lead Local Flood Authority (LLFA) visited affected residents to offer advice & gather information as well as assessed the impact of the flood report after the incident.
18/06/2021	On the 18/06/2021 - one property was internally flooded on Dock Tavern Lane, Gorleston (FWF/21/4887). One property was internally flooded on Pavilion Road, Gorleston (FWF/21/5062). One property was internally flooded on Quay Road, Gorleston (FWF/21/5098). These incidents were reported by the media via an article on the 18 June 2021,	The Fire and Rescue Service responded and pumped out during the incident. NCC (LLFA) visited affected residents to offer advice & gather information after the incident.
20/06/2021	On the 20/06/2021 - one property was internally flooded on Pavilion Road, Gorleston. This incident was reported by a resident via an online flood report form on the 7 July 2021, (FWF/21/5062).	The Fire and Rescue Service responded and pumped out during the incident. NCC (LLFA) assessed validity & impact of the flood report after the incident.
22/06/2021	On the 22/06/2021 - one property was internally flooded on High Street, Gorleston. This incident was reported by NCC (Highways) via an electronic report on the 26 July 2021, (FWF/21/5313)	NCC (LLFA) - assessed validity & impact of the flood report after the incident.

Recent Rainfall Within the Catchment

There were no rain gauges within 2.5km of the flood incidents within this catchment.

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
12/07/2016	Internal flooding on High Street	N/A
06/10/2019	Internal flooding on High Street	N/A

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 the following recommendations are made in three areas:

1) 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.

2) Property owners of affected properties should seek their own legal advice.

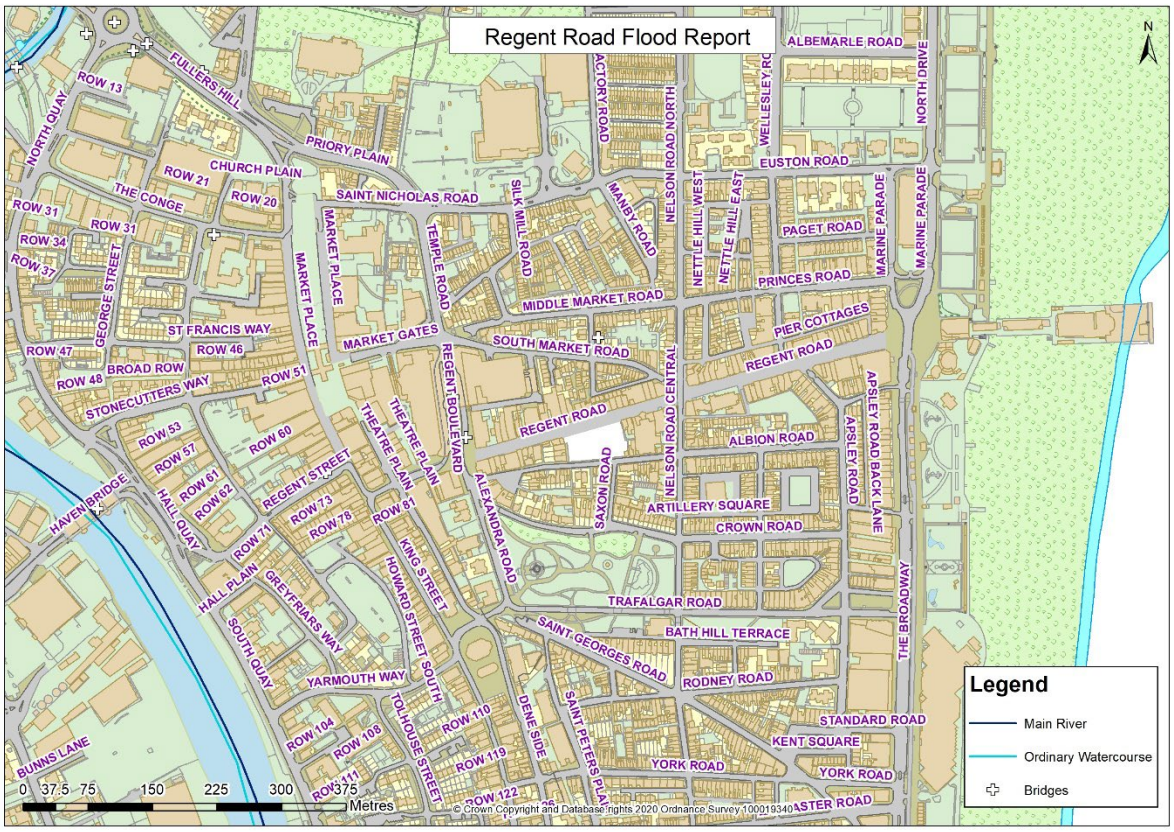
3) Norfolk County Council should:
   - incorporate all relevant information of actual flooding into the review of the Norfolk Preliminary Flood Risk Assessment (PFRA).
   - review and monitor the delivery of recommendations within this and other relevant flood investigation reports.

Location and date of flooding	Causes of flooding	Recommendation	Who has responsibilities to manage the cause(s) of the flood?
Pavilion Road, Gorleston 18/06/2021 Quay Road, Gorleston 18/06/2021 Pavilion Road, Gorleston 20/06/2021 High Street, Gorleston 22/06/2021	Run-off from rainfall pooled at a low point within the catchment affecting properties.	NCC will investigate with third parties a partnership funding solution to mitigate the risk experienced at this location.	NCC (LLFA) & NCC (Highways)
Bells Marsh Road, Gorleston 18/06/2021 Dock Tavern Lane, Gorleston 18/06/2021 Pavilion Road, Gorleston 18/06/2021 Quay Road, Gorleston 18/06/2021 Pavilion Road, Gorleston 20/06/2021 High Street, Gorleston 22/06/2021	Surface run-off from rainfall made its way onto the highway and flowed along the road network and onto the accesses of affected properties that were situated lower than these features. Additionally, vehicles using the highway passed through the flood water causing it to wash towards some of the affected properties.	NCC (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. In do so they should consider options to prevent pooling on the highway	NCC (Highways)

Location and date of flooding	Causes of flooding	Recommendation	Who has responsibilities to manage the cause(s) of the flood?
Bells Marsh Road, Gorleston 18/06/2021 Dock Tavern Lane, Gorleston 18/06/2021 Pavilion Road, Gorleston 18/06/2021 Quay Road, Gorleston 18/06/2021 Pavilion Road, Gorleston 20/06/2021 High Street, Gorleston 22/06/2021	The surface water drainage system network was fully obstructed by high water levels downstream due to structural and/or mechanical failure. This caused the failure of the upstream drainage system contributing to flooding at the affected properties.	Anglian Water will review the capacity & level of maintenance required to sustain the design efficiency of their drainage systems that serve the flooding location in line with the risk identified. Anglian Water should assess whether the capacity of the current system is able to provide protection that aligns with British standards. This may require a survey of the system being undertaken.	Anglian Water
Bells Marsh Road, Gorleston 18/06/2021 Dock Tavern Lane, Gorleston 18/06/2021 Pavilion Road, Gorleston 18/06/2021 Quay Road, Gorleston 18/06/2021 Pavilion Road, Gorleston 20/06/2021 High Street, Gorleston 22/06/2021	Run-off from rainfall was directed towards the combined drainage network. These flows could not be accommodated as the system was already overloaded. This directed flood water towards the affected properties. Additionally the system was surcharging which contributed to the flooding of the properties.	Anglian Water should work with partner organisations to identify the potential for managing the amount or rate of surface water entering their drainage system in flood events.	Anglian Water

Location and date of flooding	Causes of flooding	Recommendation	Who has responsibilities to manage the cause(s) of the flood?
Bells Marsh Road, Gorleston 18/06/2021 Dock Tavern Lane, Gorleston 18/06/2021 Pavilion Road, Gorleston 18/06/2021 Quay Road, Gorleston 18/06/2021 Pavilion Road, Gorleston 20/06/2021 High Street, Gorleston 22/06/2021	The flood water entered the properties through low thresholds at entrances.	Property owners should protect their buildings through flood protection measures where appropriate. NCC (LLFA) will communicate with residents to advise them how they may apply for grants available. These grants are subject to a funding application. Property owners could also carry out their own measures where funding is not forthcoming, or residents are unwilling to wait.	Property owners & NCC (LLFA)

Flooding and Flood Risk within Great Yarmouth



Street map showing location of Regent Road, Great Yarmouth.

Description of Location

The flooded property is located within an urban coastal catchment, situated on a pedestrianised street, with numerous shops/residential properties within proximity of one another.

Flood Incidents Within this Catchment

Within this catchment one incident of internal flooding has been assessed as part of this investigation detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
04/06/2021	On the 04/06/2021 - one property was internally flooded on Regent Road, Great Yarmouth. This incident was reported by a resident via an online flood report form on the 04 June 2021, (FWF/21/4824)	Norfolk County Council (Lead Local Flood Authority) assessed validity and impact of the flood report after the incident.

Recent Rainfall Within the Catchment

There were no rain gauges within 2.5km of the incidents of flooding within this catchment.

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
10/07/2014	Internal flooding to property on Market Gate	N/A

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 the following recommendations are made in three areas:

1) 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.

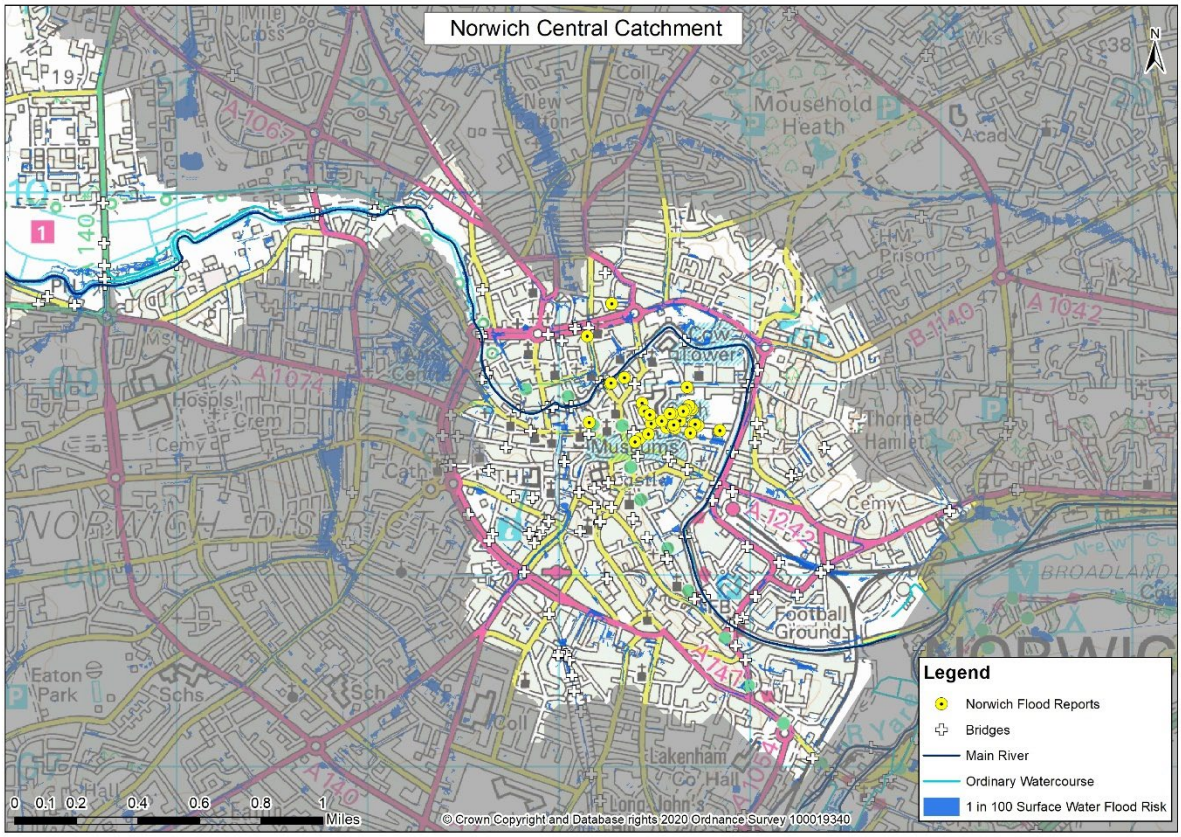
2) Property owners of affected properties should seek their own legal advice.

3) Norfolk County Council 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.

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/Individual with Relevant Flood Risk Roles
Regent Road, Great Yarmouth, 04/06/2021	The combined drainage system was partially obstructed by high water levels. This reduced the efficiency of the upstream drainage system contributing to flooding at the affected properties.	Anglian Water will review the capacity & level of maintenance required to sustain the design efficiency of their drainage systems that serve the flooding location in line with the risk identified. AW should assess whether the capacity of the current system is able to provide protection that aligns with British standards. This may require a survey of the system being undertaken.	Anglian Water
Regent Road, Great Yarmouth, 04/06/2021	Rainfall was directed into the combined system causing it to surcharge elsewhere. This surcharging contributed to the flooding at the affected property.	Anglian Water work with partner organisations to identify the potential for managing the amount or rate of surface water entering their drainage system in flood events.	Anglian Water

Norwich City Council Area

Flooding and Flood Risk Within the Norwich Central Catchment



Map showing location of flooded properties in Norwich Central Catchment.

Description of Catchment

The catchment is urban in nature located within the city centre of Norwich. There are a significant number of residential properties within the catchment as well as numerous commercial ones. There are several areas of green space within the catchment, however the surface is predominantly metalled, including areas of car parking. The catchment is bisected by the River Wensum to the north.

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 consider flood risk from groundwater or reservoir failure.

Flood Risk Data Source	Critical Services	Residential	Non-residential
[a] Number of properties subject to surface water flood risk at 1 in 30-year event:	0	4	3
[b] Number of properties subject to surface water flood risk at 1 in 100-year event:	0	13	6
[c] Number of properties subject to flood risk from rivers and the sea at 1 in 30-year event:	0	0	0
[d] Number of properties subject to flood risk from rivers and the sea at 1 in 100-year event:	0	0	0
[e] Number 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] Number 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

Flood Incidents Within this Catchment

Within this catchment 26 incidents of internal flooding have been assessed as part of this investigation. These incidents are detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
09/07/2021	On the 09/07/2021 - two properties were internally flooded on Quayside, Norwich. These incidents were reported by: a resident via email correspondence on the 14 July 2021, (FWF/21/5241) and a resident via an online flood report form on the 09 July 2021, (FWF/21/5133)	NCC (LLFA) visited affected residents to offer advice and to gather information after the incident.
09/07/2021	On the 09/07/2021 - 21 properties were internally flooded on The Close, Norwich. These incidents were reported by: a member of the public via email correspondence on the 08 October 2021, (FWF/21/5704). A resident via an online flood report form on the 8 October 2021, (FWF/21/5700), (FWF/21/5701), (FWF/21/5702), (FWF/21/5703), (FWF/21/5705), (FWF/21/5711), (FWF/21/5706), (FWF/21/5707), (FWF/21/5708), (FWF/21/5709), (FWF/21/5710) A resident via personal communication on the 25 January 2022, (FWF/21/6177), (FWF/21/6178), (FWF/21/6179), (FWF/21/6180), (FWF/21/6181), (FWF/21/6182), (FWF/21/6183), (FWF/21/6184) & (FWF/21/5700)	The Fire and Rescue Service responded and pumped out during the incident. NCC (LLFA) assessed validity and impact of the flood report after the incident. NCC (LLFA) visited affected residents to offer advice and to gather information after the incident.
09/07/2021	On the 09/07/2021 - 1 property was internally flooded on Magdalen Street, Norwich. This incident was reported by a resident via an online flood report form on the 09 July 2021, (FWF/21/5099).	NCC (LLFA) assessed validity and impact of the flood report after the incident.

Date of Incident	Incident as reported	What was the response to the flood incident
09/07/2021	On the 09/07/2021 - two properties were internally flooded on Joseph Lancaster Way, Norwich. This incident was reported by Anglian Water via an electronic report on the 23 July 2021, (FWF/21/5309, FWF/21/5310)	Anglian Water visited affected residents to offer advice and to gather information after the incident. The Fire and Rescue Service visited affected residents to offer advice and to gather information during the incident. NCC (LLFA) assessed validity and impact of the flood report after the incident.

Recent Rainfall Within the Catchment

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.

The County Council has sought to use data from rain gauges where incidents of flooding are located within a 2.5km 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.

Twelve of the incidents (46.2%) of internal flooding in this catchment are within 2.5km of a rain gauge.

Data from rain gauges located in Norwich Heigham has been analysed to ascertain the intensity of the rainfall events experienced in the catchment. This analysis was useful in assessing (in broad terms) if the design capacity of drainage systems within the affected areas were exceeded. However, to ensure that any analysis reflects the localised nature of these events a 2.5km radius from these instruments has been used.

The rainfall events recorded by gauges for this catchment on 09 July 2021 show 18mm of rainfall was recorded as falling in 45 minutes at the Norwich Heigham rainfall monitoring station. This intensity of rainfall for the total duration equates to a 1 in 4.6-year rainfall event.

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
27/05/2014	Four properties on Prince of Wales Road were internally flooded	N/A
29/03/2015	One property on Prince of Wales Road were internally flooded	Less than a 1 in 1 year rainfall event
26/08/2015	Two properties on Prince of Wales Road were internally flooded	1 in 3.7-year rainfall event

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 the following recommendations are made in three areas:

1) 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.

2) Property owners of affected properties should seek their own legal advice.

3) Norfolk County Council 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.

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/Individual with Relevant Flood Risk Roles
Quayside, Norwich, 09/07/2021	Run-off from rainfall was concentrated along overland flow paths on which the affected properties are positioned.	NCC (LLFA) will investigate with third parties on developing a solution to mitigate the risk experienced at this location.	NCC (LLFA)
Quayside, Norwich, 09/07/2021	Run-off from rainfall was obstructed by man-made constructions (e.g., walls, embankments) which directed flood water towards the affected properties.	NCC (LLFA) will determine if works are needed to remove the risk posed by structures that form obstructions to flows and communicate with affected parties.	NCC (LLFA) with property owners

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/Individual with Relevant Flood Risk Roles
Quayside, Norwich, 09/07/2021	The surface water drainage system was obstructed by debris and/or high-water levels downstream. This reduced the efficiency and caused the failure of the upstream drainage system contributing to flooding at the affected properties. The river outfall was possibly obstructed by high water levels downstream. This reduced the efficiency of the upstream drainage system contributing to flooding at the affected properties.	The relevant private property owner/asset owner should instigate a regular regime of maintenance to ensure the system is free from obstruction e.g., silt at all times.	Property owner/Private drainage system owner

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/Individual with Relevant Flood Risk Roles
Quayside, Norwich, 09/07/2021	Run-off from 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. Rainfall was directed into the surface water system causing it to surcharge elsewhere. This surcharging contributed to the flooding at the affected properties.	Private asset owner should work with partner organisations to identify the potential for managing the amount or rate of surface water entering their drainage system in flood events.	Private asset owner with assistance from NCC (LLFA)
Quayside, Norwich, 09/07/2021	The flood water entered the properties through thresholds at entrances due to the low level of the properties relative to the surrounding area.	Property owners should protect their buildings through flood protection measures where appropriate. NCC will communicate with residents to advise them how they may apply for grants available.	Property owners with assistance from NCC (LLFA)

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/Individual with Relevant Flood Risk Roles
The Close, Norwich, 09/07/2021	Run-off from rainfall was concentrated along overland flow paths on which the affected properties are positioned.	NCC (LLFA) will investigate with third parties on developing a solution to mitigate the risk experienced at this location.	NCC (LLFA)
The Close, Norwich, 09/07/2021	Surface run-off from rainfall made its way onto roads and flowed along the road network and onto the accesses of affected properties that were situated lower than these features.	NCC (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.	Norfolk County Council (Highways)

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/Individual with Relevant Flood Risk Roles
The Close, Norwich, 09/07/2021	The foul drainage network was obstructed by debris or silt/high water levels downstream. This caused the failure of the upstream drainage system contributing to flooding at the affected properties.	Anglian Water will review the capacity & level of maintenance required to sustain the design efficiency of their drainage systems that serve the flooding location in line with the risk identified. Anglian Water should assess whether the capacity of the current system is able to provide protection that aligns with British Standards. This may require a survey of the system being undertaken.	Anglian Water

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/Individual with Relevant Flood Risk Roles
The Close, Norwich, 09/07/2021	Run-off from rainfall was directed towards the combined 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 additional highway connections into existing drainage networks. Rainfall was directed into the combined system causing it to surcharge elsewhere. This surcharging contributed to the flooding at the affected properties.	Anglian Water should work with partner organisations to identify the potential for managing the amount or rate of surface water entering their drainage system in flood events.	Anglian Water and NCC (Highways)
The Close, Norwich, 09/07/2021	The flood water entered the properties through low thresholds at entrances.	Property owners should protect their buildings through flood protection measures where appropriate. NCC will communicate with residents to advise them how they may apply for grants available.	Property owners with assistance from NCC (LLFA)

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/Individual with Relevant Flood Risk Roles
Joseph Lancaster Way, Norwich, 09/07/2021	The foul drainage network was obstructed by debris or silt/high water levels downstream. This caused the failure of the upstream drainage system contributing to flooding at the affected properties.	Anglian Water will review the capacity & level of maintenance required to sustain the design efficiency of their drainage systems that serve the flooding location in line with the risk identified. Anglian Water should assess whether the capacity of the current system is able to provide protection that aligns with British Standards. This may require a survey of the system being undertaken.	Anglian Water

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/Individual with Relevant Flood Risk Roles
Joseph Lancaster Way, Norwich, 09/07/2021	Rainfall was directed into the foul system causing it to surcharge elsewhere. This surcharging contributed to the flooding at the affected properties.	Anglian Water should work with partner organisations to identify the potential for managing the amount or rate of surface water entering their drainage system in flood events. Anglian Water to investigate foul sewer and private connections and consider non return valves where practical and where they do not increase risk elsewhere.	Anglian Water

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/Individual with Relevant Flood Risk Roles
Magdalen Street, Norwich, 09/07/2021	The surface water drainage system was obstructed by debris and/or high-water levels downstream. This reduced the efficiency and caused the failure of the upstream drainage system contributing to flooding at the affected properties. The river outfall was possibly obstructed by high water levels downstream. This reduced the efficiency of the upstream drainage system contributing to flooding at the affected properties.	The relevant private property owner/asset owner should instigate a regular regime of maintenance to ensure the system is free from obstruction e.g., silt at all times.	Property owner/Private drainage system owner

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/Individual with Relevant Flood Risk Roles
Magdalen Street, Norwich, 09/07/2021	Individual property drainage was unmaintained and cannot cope with heavy rainfall. Individual property drainage was potentially obstructed by debris. This reduced the efficiency of the drainage system contributing to the accumulation of flood water at the affected properties.	The relevant organisation/property owner should instigate a regular regime of maintenance to ensure the system is free from obstruction.	Property owner

Flooding and Flood Risk Within the Lakenham Catchment

Street map showing location of City Road, Lakenham, Norwich.

Description of Location

The property is located to the south of the city, within a heavily urbanised area south of Lakenham Recreation Ground which forms a large open space.

Flood Incidents Within this Catchment

Within this catchment one incident of internal flooding have been assessed as part of this investigation. This incident is detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
07/08/2021	On the 07/08/2021 - one property was internally flooded on City Road, Norwich. This incident was reported by NCC (Highways) via an electronic report on the 09 September 2021, (FWF/21/5582)	NCC (LLFA) assessed validity and impact of the flood report after the incident.

Recent Rainfall Within the Catchment

There were no rain gauges within 2.5km of the incidents of flooding within this catchment.

Historic Flooding Incidents Within the Location

There is no historic flooding at this location.

Causes of Flooding Within the Location 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 the following recommendations are made in three areas:

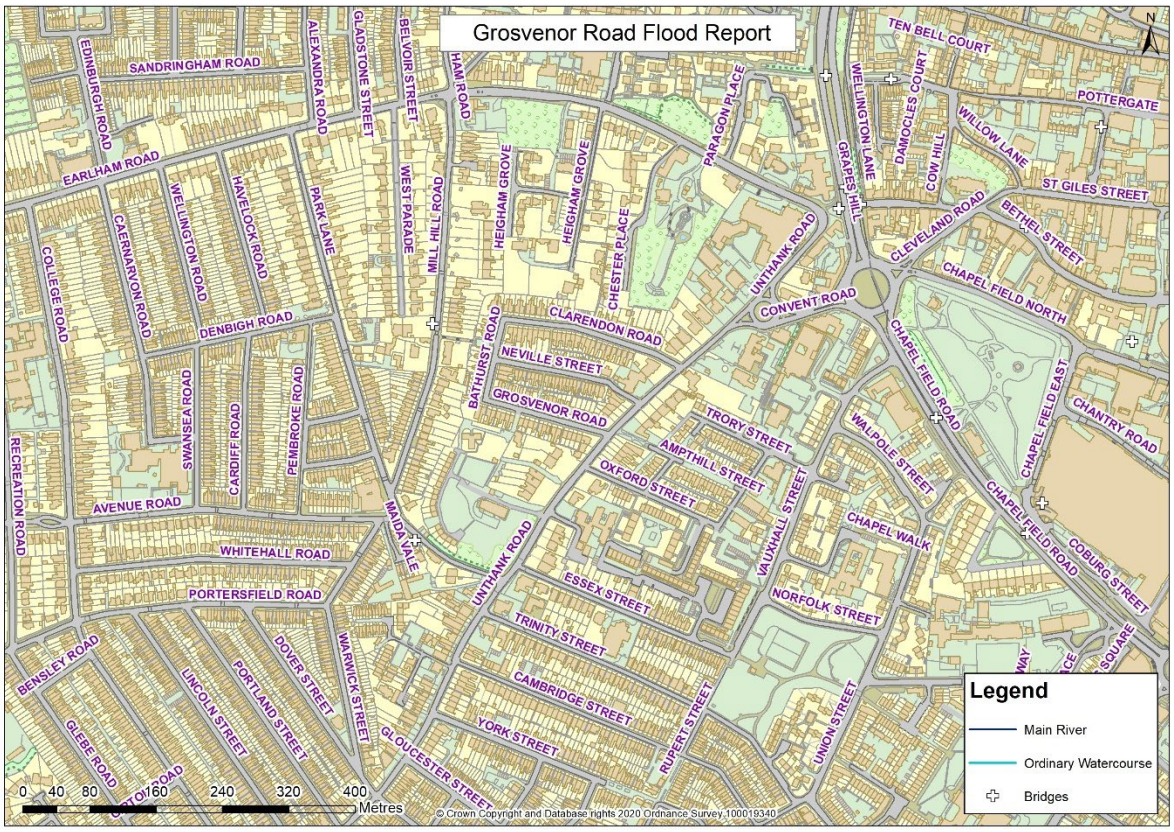
1) Risk Management Authorities should:
   - Communicate with affected residents where their assets have given rise to the flooding of properties.
   - Review the appropriateness of their response to flooding.
   - Determine the integrity and/or capacity of their assets where they have contributed to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

2) Property owners of affected properties should seek their own legal advice.

3) Norfolk County Council 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.

Location and date of flooding	Causes of flooding	Recommendation	Who has responsibilities to manage the cause(s) of the flood?
City Road, Norwich, 07/08/2021	Surface run-off from rainfall made its way onto a footway and flowed along the network and onto the accesses of affected properties that were situated lower than these features.	NCC (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.	NCC (Highways)
City Road, Norwich, 07/08/2021	The flood water entered the property through low thresholds at entrances.	Property owners should protect their buildings through flood protection measures where appropriate. NCC (LLFA) will communicate with resident to advise them how they may apply for grants available. These grants are subject to a funding application. Property owners could also carry out their own measures where funding is not forthcoming, or residents are unwilling to wait.	Property owner and NCC (LLFA)
City Road, Norwich, 07/08/2021	The loss of pre-existing drainage features i.e., highway gulley, at the location exacerbated the flooding.	NCC (Highways) could confirm, where possible, the existence of any connection and/or provide reconnection of lost gulley to the wider drainage network. This work should seek to confirm where the drainage network conveys flows to.	NCC (Highways)

Flooding and Flood Risk Within the Unthank Catchment



Street map showing location of Grosvenor Road, Norwich.

Description of Catchment

The property is located to the West of city centre, within a heavily urbanised area with multiple terraced houses.

Flood Incidents Within this Catchment

Within this catchment one incident of internal flooding has been assessed as part of this investigation. This incident is detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
09/07/2021	On the 09/07/2021 - one property was internally flooded on Grosvenor Road, Norwich. This incident was reported by Anglian Water via an electronic report on the 23 July 2021, (FWF/21/5308)	NCC (LLFA) assessed validity and impact of the flood report after the incident.

Recent Rainfall Within the Catchment

There were no rain gauges within 2.5km of the incidents of flooding within this catchment.

Historic Flooding Incidents Within the Location

There is no historic flooding at this location.

Causes of Flooding Within the Location 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 the following recommendations are made in three areas:

1) 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.

2) Property owners of affected properties should seek their own legal advice.

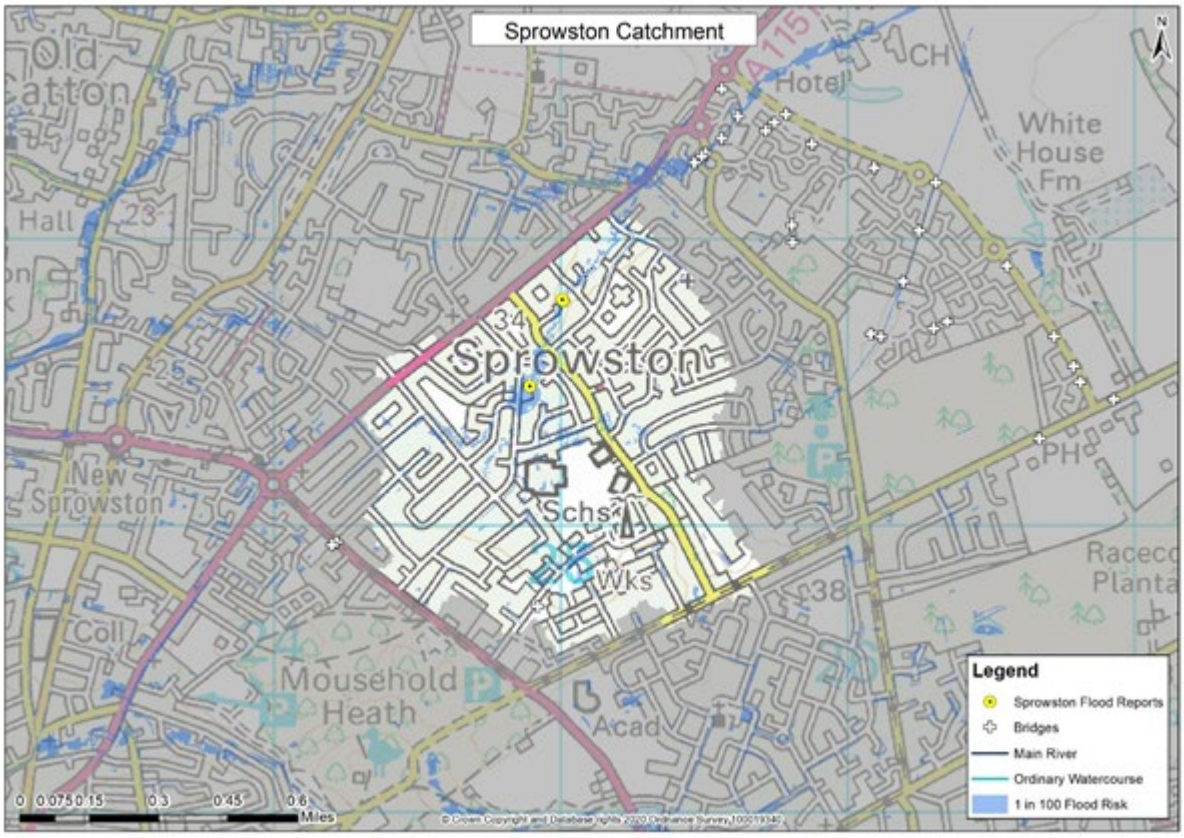
3) Norfolk County Council should:
    - Incorporate all relevant information of actual flooding into the review of the Norfolk Preliminary Flood Risk Assessment (PFRA).
    - Review and monitor the delivery of recommendations within this and other relevant flood investigation reports.

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Grosvenor Road, Norwich, 09/07/2021	The surface water drainage system was potentially obstructed by water levels downstream. This reduced the efficiency of the upstream drainage system contributing to flooding at the affected properties.	Anglian Water and/or property owner should instigate a regular regime of maintenance to ensure the system is free from obstruction (i.e., tree leaves/roots/silt) at all times.	Anglian Water/Property Owner
Grosvenor Road, Norwich, 09/07/2021	Rainfall was directed into the surface water system causing it to surcharge elsewhere. This surcharging contributed to the flooding at the affected property.	Anglian Water should work with partner organisations to identify the potential for managing the amount or rate of surface water entering their drainage system in flood events.	Anglian Water
Grosvenor Road, Norwich, 09/07/2021	Individual property drainage was unmaintained and cannot cope with heavy rainfall. Individual property drainage was potentially obstructed by debris/silt/high water levels downstream. This reduced the efficiency of the upstream drainage system contributing to the accumulation of flood water at the affected property.	The property owner should instigate a regular regime of maintenance to ensure the system is free from obstruction (i.e., tree leaves/roots/silt) at all times.	Property owner

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Grosvenor Road, Norwich, 09/07/2021	Run-off from rainfall was directed towards Individual property drainage. These flows could not be accommodated as the system is of insufficient capacity to deal with this amount of water. This directed flood water towards the affected property.	The property owner should determine the adequacy of the on-site drainage and where appropriate increase on-site storage capacity and system efficiency.	Property owner

Broadland District Council Area

Flooding and Flood Risk within the Sprowston Catchment



Map showing location of flooded properties in Sprowston Catchment.

Description of Catchment

The catchment is to the North of Norwich in a heavily suburbanised area. Multiple properties, mainly semi-detached, are in close proximity of one another on estate type roads. Areas of green are mainly limited to small residential gardens with a handful of larger areas within 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 consider flood risk from groundwater or reservoir failure.

Flood Risk Data Source	Critical Services	Residential	Non-residential
[a] Number of properties subject to surface water flood risk at 1 in 30-year event:	1	44	20
[b] Number of properties subject to surface water flood risk at 1 in 100-year event:	1	198	36
[c] Number of properties subject to flood risk from rivers and the sea at 1 in 30-year event:	0	0	0
[d] Number of properties subject to flood risk from rivers and the sea at 1 in 100-year event:	0	0	0
[e] Number 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] Number 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

Flood Incidents Within this Catchment

Within this catchment four incidents of internal flooding have been assessed as part of this investigation. These incidents are detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
09/07/2021	On the 09/07/2021 - two properties were internally flooded on Martin Close, Sprowston. These incidents were reported by: a member of the public via email correspondence on the 12 July 2021, (FWF/21/5287) a resident via an online flood report form on the 12 July 2021, (FWF/21/5219).	NCC (LLFA) visited affected residents to offer advice and to gather information after the incident.
09/07/2021	On the 09/07/2021 - one property was internally flooded on Cannerby Lane, Sprowston. This incident was reported by a member of the public via email correspondence on the 13 July 2021, (FWF/21/5419)	NCC (LLFA) visited affected residents to offer advice and to gather information after the incident. NCC (Highways) inspected and cleared the Cannerby Lane Drainage system Anglian Water visited affected residents to offer advice and to gather information after the incident. Anglian Water carried out maintenance work to the highway drainage system after the incident.

Recent Rainfall Within the Catchment

There were no rain gauges within 2.5km of the incidents of flooding within this catchment.

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
27/05/2014	Two properties Internally flooded on Merlin Mews	N/A
27/05/2014	Five properties Internally flooded on Cannerby Lane	N/A
20/07/2014	Internal flooding on Martin Close	N/A
05/01/2015	Four properties internally flooded on Cannerby Lane	N/A
05/01/2015	Internal flooding on Martin Close	N/A

Date of incident	Impact	Rainfall intensity
09/02/2020	Two properties internally flooded on Cannerby Lane	N/A

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 the following recommendations are made in three areas:

1) 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.

2) Property owners of affected properties should seek their own legal advice.

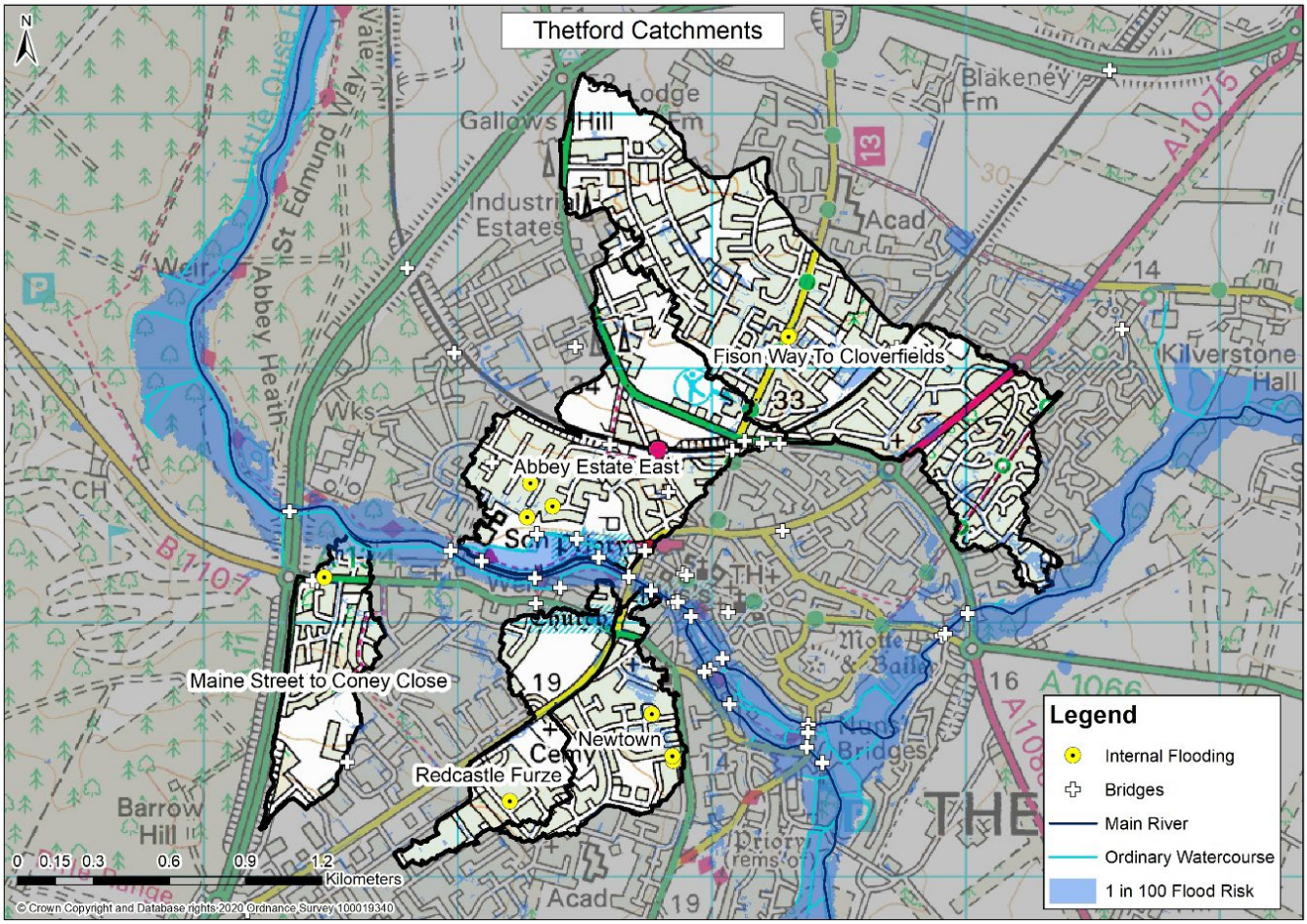
3) Norfolk County Council should:
   - Incorporate all relevant information of actual flooding into the review of the Norfolk Preliminary Flood Risk Assessment (PFRA).
   - Review and monitor the delivery of recommendations within this and other relevant flood investigation reports.

Location and date of flooding	Causes of flooding	Recommendation	Who has responsibilities to manage the cause(s) of the flood?
Martin Close, Sprowston, 09/07/2021 Cannerby Lane, Sprowston, 09/07/2021	Run-off from rainfall was concentrated along overland flow paths on which the affected properties are positioned.	NCC (LLFA) will investigate with third parties on developing a partnership funding solution to mitigate the risk experienced at this location. This could be either through submission of a bid to secure Partnership funding or through negotiation with other organisations and the local community.	NCC (LLFA)
Martin Close, Sprowston, 09/07/2021 Cannerby Lane, Sprowston, 09/07/2021	The surface water drainage system was obstructed by high water levels/silt downstream. This reduced the efficiency of the upstream drainage system contributing to flooding at the affected properties.	NCC (Highways) cleaned the Cannerby Lane system in March 2022. NCC (Highways) should undertake further work to clean and trace the system downstream to Wroxham Road	NCC (Highways)

Location and date of flooding	Causes of flooding	Recommendation	Who has responsibilities to manage the cause(s) of the flood?
Cannerby Lane, Sprowston, 09/07/2021	Rainfall was directed into the foul system causing it to surcharge elsewhere. This surcharging contributed to the flooding at the affected property.	Anglian Water to investigate sealing manholes or using low-leak lids where safe to do so. Checks should be undertaken that no residual flooding elsewhere in the system by sealing problem manholes. Anglian Water to investigate foul sewer and private connections and consider non return valves where practical and where they do not increase risk elsewhere.	Anglian Water
Cannerby Lane, Sprowston, 09/07/2021	The foul drainage system network was obstructed by debris/high water levels downstream. This reduced the efficiency of the upstream drainage system contributing to flooding at the affected properties.	Anglian Water to investigate foul sewer and establish whether system is in fact a combined system, is blocked or has insufficient capacity. Anglian Water should instigate a regular regime of maintenance to ensure the system is free from obstruction at all times.	Anglian Water

Location and date of flooding	Causes of flooding	Recommendation	Who has responsibilities to manage the cause(s) of the flood?
Martin Close, Sprowston, 09/07/2021 Cannerby Lane, Sprowston, 09/07/2021	The flood water entered the properties through low thresholds at entrances.	Property owners should protect their buildings through flood protection measures where appropriate. NCC (LLFA) will communicate with residents to advise them how they may apply for grants available. These grants are subject to a funding application. Property owners could also carry out their own measures to reduce the impact of flooding such as installing sump pumps. Property Owners should also consider the potential to retrofit permeable areas and other methods of small-scale sustainable drainage systems.	NCC (LLFA)

Breckland Council Area
Flooding and Flood Risk Within Thetford



Map showing location of flooded properties in Thetford.

Description of Catchments Within Thetford

There are several small, urban, surface water catchments within Thetford, discharging to the River Thet. Flooding occurred within 5 of these catchments in July 2021, the catchments impacted are shown in the above map. A total of 10 properties within Thetford reported flooding during this event.

Recent Rainfall Within Thetford

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 2.5km 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.

Data from rain gauges located in Thetford has been analysed to ascertain the intensity of the rainfall events experienced in the catchment. This analysis was useful in assessing (in broad terms) if the design capacity of drainage systems within the affected areas were exceeded. However, to ensure that any analysis reflects the localised nature of these events a 2.5km radius from these instruments has been used.

The rainfall events recorded by gauges for this catchment are:

27 July 2021 - 24mm of rainfall was recorded as falling in 0 hours 30 minutes at the Thetford rainfall monitoring station. This intensity of rainfall for the total duration equates to a 15-year rainfall event.

Historic Flooding Incidents Within Impacted Thetford Catchments

The following table lists previous flooding incidents within the catchments that have been recorded.

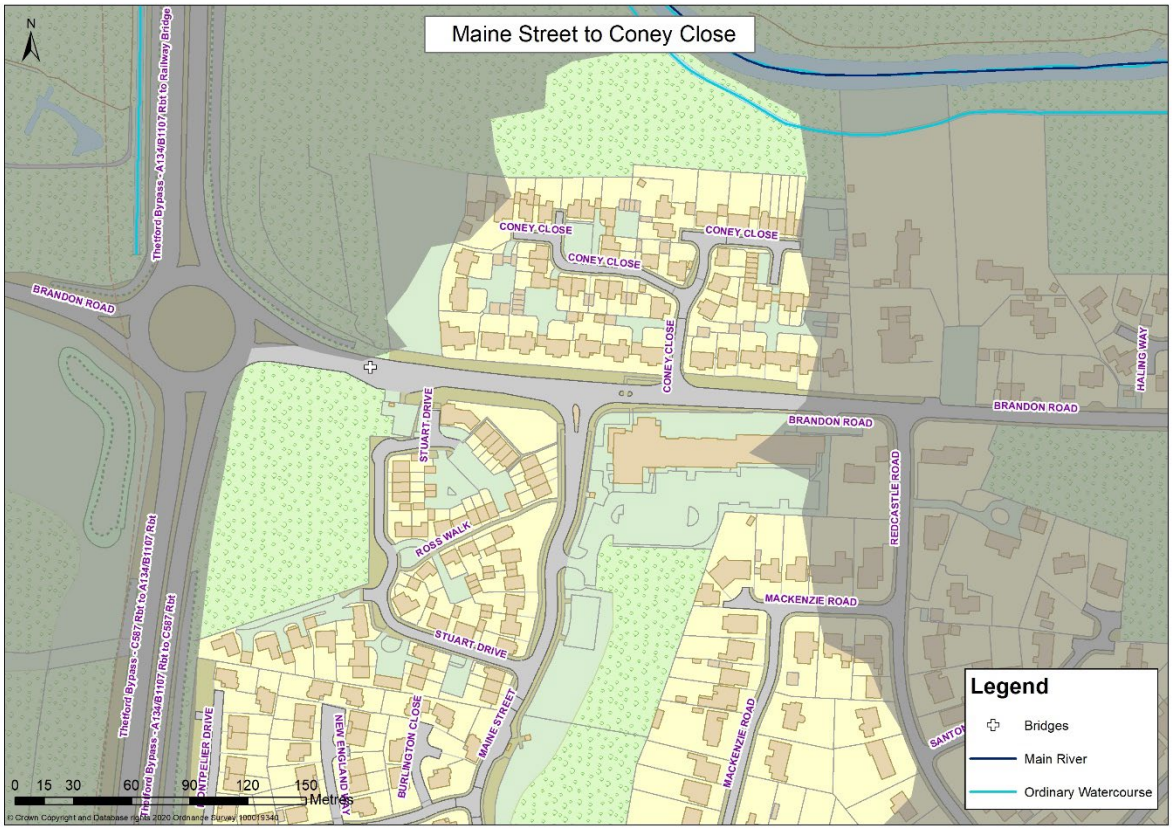
Date of incident	Impact	Rainfall intensity
04/09/2020	Internal Flooding of 1 property on Brandon Road, Thetford	Heavy Rain
16/08/2022	Internal Flooding of 1 property on Brandon Road, Thetford	Heavy Rain
06/11/2022	Internal Flooding of 1 property on Brandon Road, Thetford	Heavy Rain

Flood Risk Within Impacted Thetford Catchments

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 the Thetford catchments, impacted in the summer 2021 flooding, 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 consider flood risk from groundwater or reservoir failure.

Flood Risk Data Source	Critical Services	Residential	Non-residential
[a] Number of properties subject to surface water flood risk at 1 in 30-year event:	0	183	16
[b] Number of properties subject to surface water flood risk at 1 in 100-year event:	0	518	56
[c] Number of properties subject to flood risk from rivers and the sea at 1 in 30-year event:	0	0	0
[d] Number of properties subject to flood risk from rivers and the sea at 1 in 100-year event:	0	0	0
[e] Number 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] Number 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

Flood Incidents Within the Maine Street and Coney Close Catchment



Street Map showing location of Brandon Road, Thetford.

Within this catchment one incident of internal flooding have been assessed as part of this investigation. This incident is detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
27/07/2021	On the 27/07/2021 - one property was internally flooded on Brandon Road, Thetford. This incident was reported by NCC (Highways) via email correspondence on the 02 August 2021, (FWF_21_5335)	NCC (LLFA)visited affected residents to offer advice and to gather information after the incident.

Causes of Flooding Within the Maine Street 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 the following recommendations are made in three areas:

1) 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.

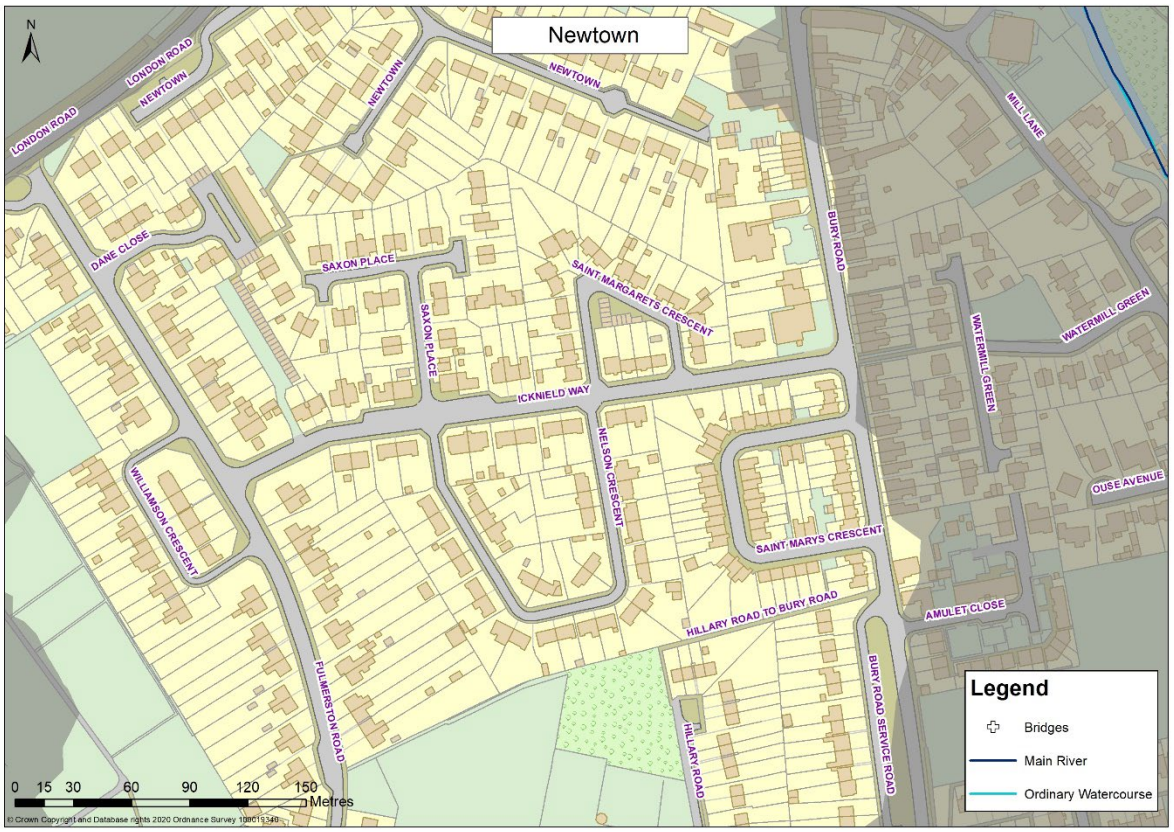
2) Property owners of affected properties should seek their own legal advice.

3) Norfolk County Council 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.

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Brandon Road, Thetford, 27/07/2021	Run-off from significant rainfall was concentrated along overland flow paths on which the affected property is positioned.	NCC (LLFA) will investigate developing a partnership funding solution to mitigate the risk experienced at this location. This could be either through submission of a bid to secure Partnership funding or through negotiation with other organisations and the local community. It is important to note this recommendation will be subject to the priorities and availability of resources of funders. It may be dependent on those property owners affected contributing towards a solution.	NCC (LLFA), Property Owner
Brandon Road, Thetford, 27/07/2021	Surface run-off from rainfall made its way onto roads and flowed along the road network and onto the accesses of affected properties that were situated lower than these features.	NCC (Highway) will consider opportunities to route flood water on the highway away from affected properties to alternative points of discharge, or other solutions as practicable.	NCC (Highways)

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Brandon Road, Thetford, 27/07/2021	Surface water gullies were fully obstructed by debris or silt. This caused the failure of the local drainage system contributing to flooding at the affected properties.	NCC (Highways) will review the capacity and level of maintenance required to sustain the design efficiency of their gullies that serve the flooding location in line with the risk identified. NCC (Highways) and Anglian Water should assess whether the capacity of the current system is able to provide protection that aligns with British standards. This may require a survey of the system being undertaken.	NCC (Highways) and Anglian Water
Brandon Road, Thetford, 27/07/2021	The flood water entered the property through low thresholds at entrances was reported to a depth of approximately 30 cm.	Property owners should protect their buildings through flood protection measures where appropriate. NCC (LLFA) will communicate with local residents to advise them how they may apply for grants available. These grants are subject to a funding application. Property owners could also carry out their own measures where funding is not forthcoming, or residents are unwilling to wait.	NCC (LLFA), property owners

Flood Incidents Within the Newtown Catchment



Street map showing location of Bury Road and St Margarets Crescent, Thetford.

Within this catchment three incidents of internal flooding have been assessed as part of this investigation. These incidents are detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
27/07/2021	On the 27/07/2021 - two properties were internally flooded on Bury Road, Thetford (FWF/21/5487, FWF/21/5488). One property was internally flooded on Margaret Crescent, Thetford (FWF/21/5585). These incidents were reported by: NCC (Highways) via email correspondence.	NCC (LLFA)visited affected residents to offer advice and to gather information after the incident. NCC (Highways) carried out maintenance work to the highway drainage system after the incident.

Causes of Flooding Within the Newtown 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 the following recommendations are made in three areas:

1) 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.

2) Property owners of affected properties should seek their own legal advice.

3) Norfolk County Council 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.

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Bury Road, Thetford, 27/07/2021 Margaret Crescent, Thetford, 27/07/2021	Run-off from rainfall pooled at a low point within the catchment affecting property. Run-off from significant rainfall was concentrated along overland flow paths on which the affected properties are positioned. Surface run-off from significant rainfall made its way onto roads and flowed along the road network and onto the accesses of affected properties that were situated lower than these features.	NCC (LLFA) will investigate with third parties a partnership funding solution to mitigate the risk experienced at this location. This could be either through submission of a bid to secure partnership funding or through negotiation with other organisations and the local community. It is important to note this recommendation will be subject to the priorities and availability of resources of funders. It may be dependent on those property owners affected contributing towards a solution.	NCC (LLFA)

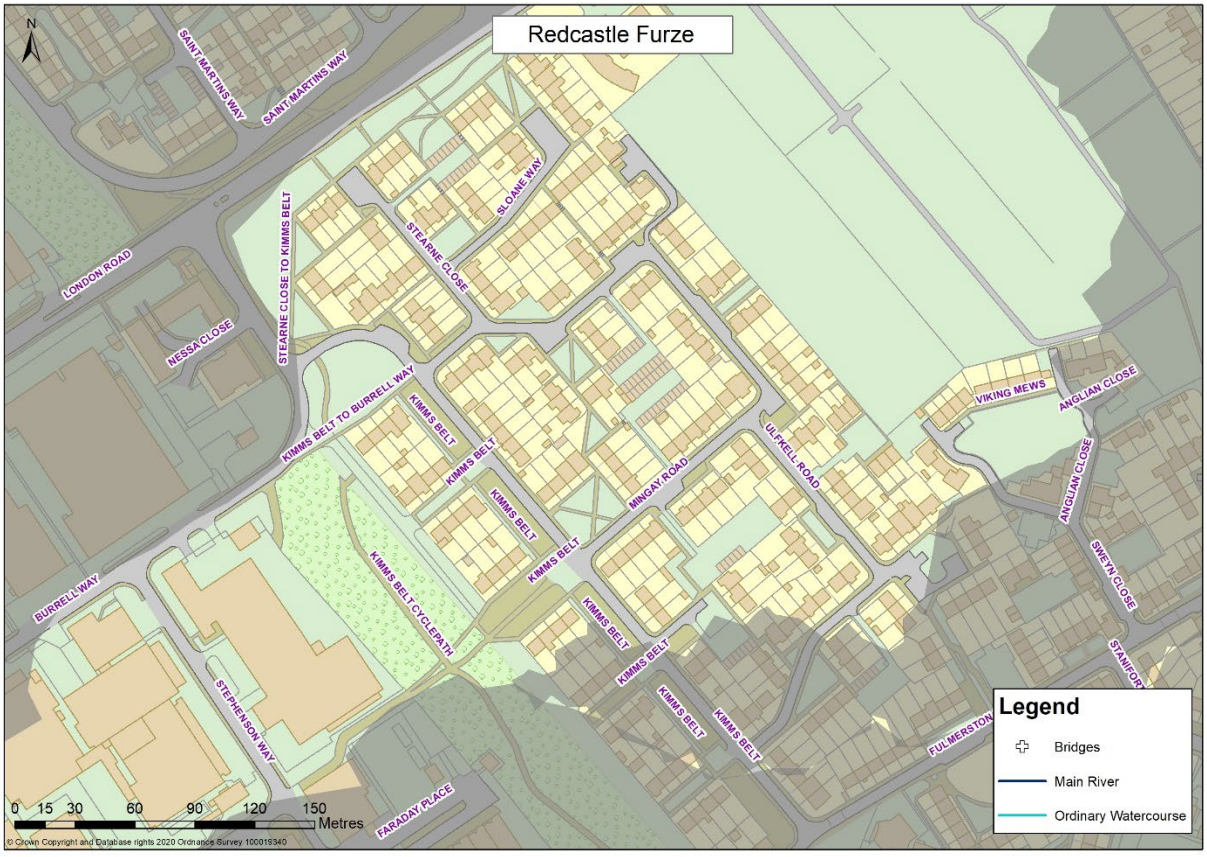
Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Bury Road, Thetford, 27/07/2021 Margaret Crescent, Thetford, 27/07/2021	The surface water drainage system network and gullies were partially obstructed by debris or silt. This reduced the efficiency of the upstream drainage system contributing to flooding at the affected properties.	NCC (Highways) and Anglian Water will review the capacity & level of maintenance required to sustain the design efficiency of their drainage systems that serve the flooding location in line with the risk identified. Anglian Water should assess whether the capacity of the current system is able to provide protection that aligns with British standards. This may require a survey of the system being undertaken. The relevant organisation/property owner should instigate a regular regime of maintenance to ensure the system is free from obstruction (i.e., tree leaves/roots) at all times.	NCC (Highways), Anglian Water
Bury Road, Thetford, 27/07/2021 Margaret Crescent, Thetford, 27/07/2021	The flood water entered the property through thresholds at entrances. The flood Water was reported to a depth of approximately 21 cm.	Property owners should protect their buildings through flood protection measures where appropriate. NCC (LLFA) will communicate with local residents to advise them how they may apply for grants available. These grants are subject to a funding application. Property owners could also carry out their own measures where funding is not forthcoming, or residents are unwilling to wait.	Property Owners / NCC (LLFA)

Flood Incidents Within the Redcastle Furze Catchment

Within this catchment one incident of internal flooding has been assessed as part of this investigation. This incident is detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
27/07/2021	On the 27/07/2021 - one property was internally flooded on Mingay Road, Thetford. This incident was reported by a resident via email correspondence on the 10 August 2021, (FWF/21/5579)	NCC (LLFA) visited affected residents to offer advice and to gather information after the incident.

Causes of Flooding Within the Redcastle Furze Catchment and Recommendations



Street map showing location of Mingay Road, Thetford.

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 the following recommendations are made in three areas:

1) 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.

2) Property owners of affected properties should seek their own legal advice.

3) Norfolk County Council 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.

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Mingay Road, Thetford, 27/07/2021	The flood water entered the property under the Threshold and was reported to a depth of approximately 7 cm.	Property owners should protect their buildings through flood protection measures where appropriate. NCC (LLFA) will communicate with local residents to advise them how they may apply for grants available. These grants are subject to a funding application. Property owners could also carry out their own measures where funding is not forthcoming, or residents are unwilling to wait.	NCC (LLFA), property owners

Flood Incidents Within the Abbey Estate East Catchment

Street map showing location of Salisbury Way and Monksgate, Thetford.

Within this catchment three incidents of internal flooding have been assessed as part of this investigation. These incidents are detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
27/07/2021	On the 27/07/2021 - two properties were internally flooded on Salisbury Way, Thetford (FWF/21/5583 and FWF/21/5329) and one property was internally flooded on Monksgate (FWF/21/5340). These incidents were reported by: NCC (Highways) via email correspondence, (FWF/21/5583 and FWF/21/5340) And a resident via email correspondence (FWF/21/5329).	NCC (LLFA) visited affected residents to offer advice and to gather information after the incident.

Causes of Flooding Within the Abbey Estate East 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 the following recommendations are made in three areas:

1) 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.

2) Property owners of affected properties should seek their own legal advice.

3) Norfolk County Council 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.

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Salisbury Way, Thetford, 27/07/2021 Monksgate, Thetford, 27/07/2021	Run-off from significant rainfall pooled at a low point within the catchment affecting properties. Run-off from significant rainfall was concentrated along overland flow paths on which the affected properties are positioned.	NCC (LLFA)will investigate with third parties a partnership funding solution to mitigate the risk experienced at this location. This could be either through submission of a bid to secure Partnership funding or through negotiation with other organisations and the local community. It is important to note this recommendation will be subject to the priorities and availability of resources of funders. It may be dependent on those property owners affected contributing towards a solution.	NCC (LLFA)
Salisbury Way, Thetford, 27/07/2021 Monksgate, Thetford, 27/07/2021	The surface water drainage system and gullies were partially obstructed by debris or silt This reduced the efficiency of the upstream drainage system contributing to flooding at the affected properties.	NCC (Highways) and Anglian Water will review the capacity & level of maintenance required to sustain the design efficiency of their drainage systems that serve the flooding location in line with the risk identified. Anglian Water should assess whether the capacity of the current system is able to provide protection that aligns with British standards. This may require a survey of the system being undertaken.	NCC (Highways), Anglian Water

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Salisbury Way, Thetford, 27/07/2021 Monksgate, Thetford, 27/07/2021	Run-off from significant 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 property. Significant rainfall was directed into the surface water system causing it to surcharge elsewhere. This surcharging contributed to the flooding at the affected properties.	Anglian Water should work with partner organisations to identify the potential for managing the amount or rate of surface water entering their drainage system in flood events.	Anglian Water
Salisbury Way, Thetford, 27/07/2021 Monksgate, Thetford, 27/07/2021	The flood water entered the properties through thresholds at entrances. The flood Water to a depth of approximately 15 cm	Property owners should protect their buildings through flood protection measures where appropriate. NCC (LLFA) will communicate with local residents to advise them how they may apply for grants available. These grants are subject to a funding application. Property owners could also carry out their own measures where funding is not forthcoming, or residents are unwilling to wait.	Property Owner and NCC (LLFA)

Flood Incidents Within the Fison Way to Cloverfields Catchment

Street map showing location of Fairfields, Thetford.

Within this catchment two incidents of internal flooding have been assessed as part of this investigation. These incidents are detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
27/07/2021	On the 27/07/2021 - two properties were internally flooded on Fairfields, Thetford. These incidents were reported by: Norfolk County Council (Highways) via email correspondence.	NCC (LLFA) visited affected residents to offer advice and to gather information after the incident.

Causes of Flooding Within the Fison Way to Cloverfields 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 the following recommendations are made in three areas:

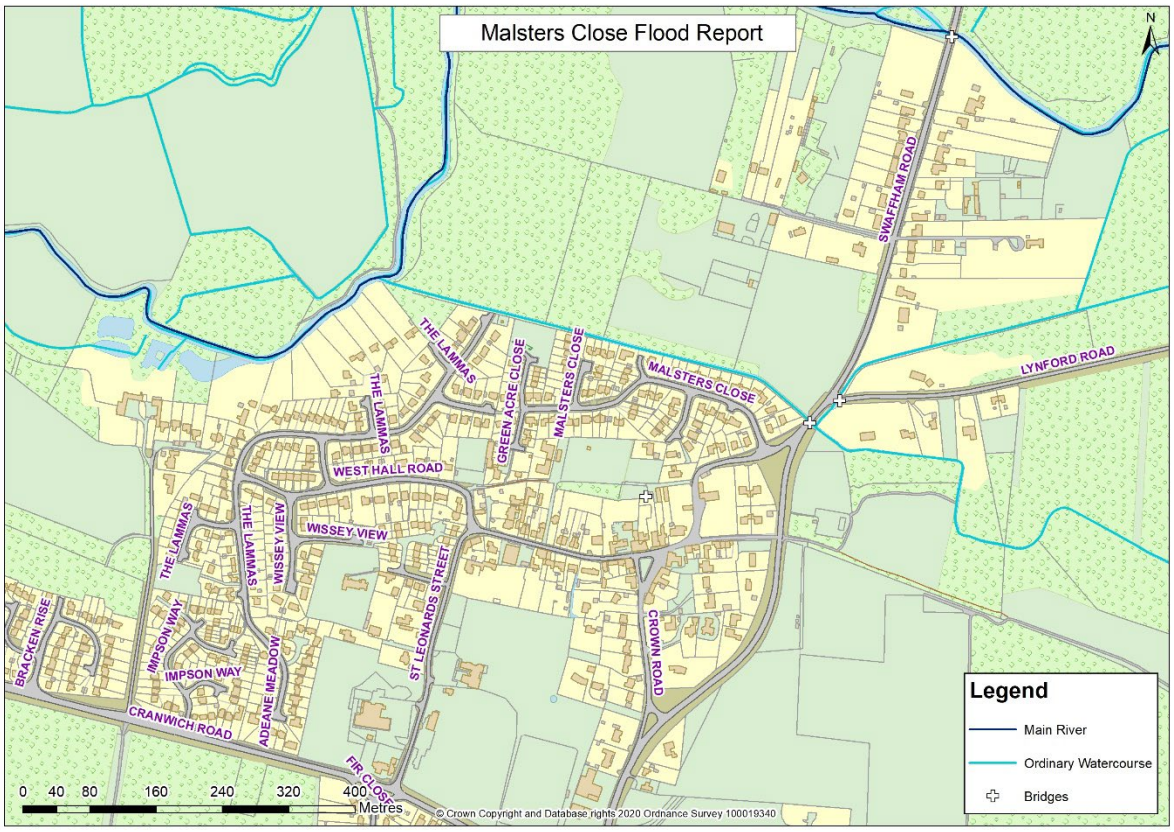
1) Risk Management Authorities should:
    - communicate with affected residents where their assets have given rise to the flooding of properties.
    - review the appropriateness of their response to flooding.
    - determine the integrity and/or capacity of their assets where they have contributed to the flooding of properties to understand the systems role in accommodating normal rainfall events as well as mitigating flooding.

2) Property owners of affected properties should seek their own legal advice.

3) Norfolk County Council 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.

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Fairfields, Thetford, 27/07/2021	Significant rainfall was directed into the surface water/foul system causing it to surcharge elsewhere. This surcharging contributed to the flooding at the affected properties.	Anglian Water should work with partner organisations to identify the potential for managing the amount or rate of surface water entering their drainage system in flood events.	Anglian Water
Fairfields, Thetford, 27/07/2021	The flood water entered the properties through thresholds at entrances.	Property owners should protect their buildings through flood protection measures where appropriate. NCC (LLFA) will communicate with local residents to advise them how they may apply for grants available. These grants are subject to a funding application. Property owners could also carry out their own measures where funding is not forthcoming, or residents are unwilling to wait. Mitigation measures that can be installed in the property to reduce the impact of flooding could include tanking basements & installing sump pumps. Property Owners should consider the potential to retrofit permeable areas and other methods of small-scale sustainable drainage systems.	Property Owners and NCC (LLFA)

Flooding and Flood Risk Within the Mundford Catchment



Street map showing location of Malsters Close, Mundford.

Description of Catchment

The location of the flooded property is semi-rural with the affected property being located with a village housing estate.

Flood Incidents Within this Catchment

Within this catchment one incident of internal flooding has been assessed as part of this investigation. This incident is detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
31/07/2021	On the 31/07/2021 - one property was internally flooded on Malsters Close, Mundford. This incident was reported by a resident via an online flood report form on the 27 October 2021, (FWF/21/5790)	Anglian Water visited affected residents to offer advice and to gather information after the incident. NCC (LLFA) visited affected residents to offer advice and to gather information after the incident.

Recent Rainfall Within the Catchment

There were no rain gauges within 2.5km of the incidents of flooding within this catchment.

Historic Flooding Incidents Within the Catchment

There is no historic flooding at this location.

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 the following recommendations are made in three areas:

1) 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.

2) Property owners of affected properties should seek their own legal advice.

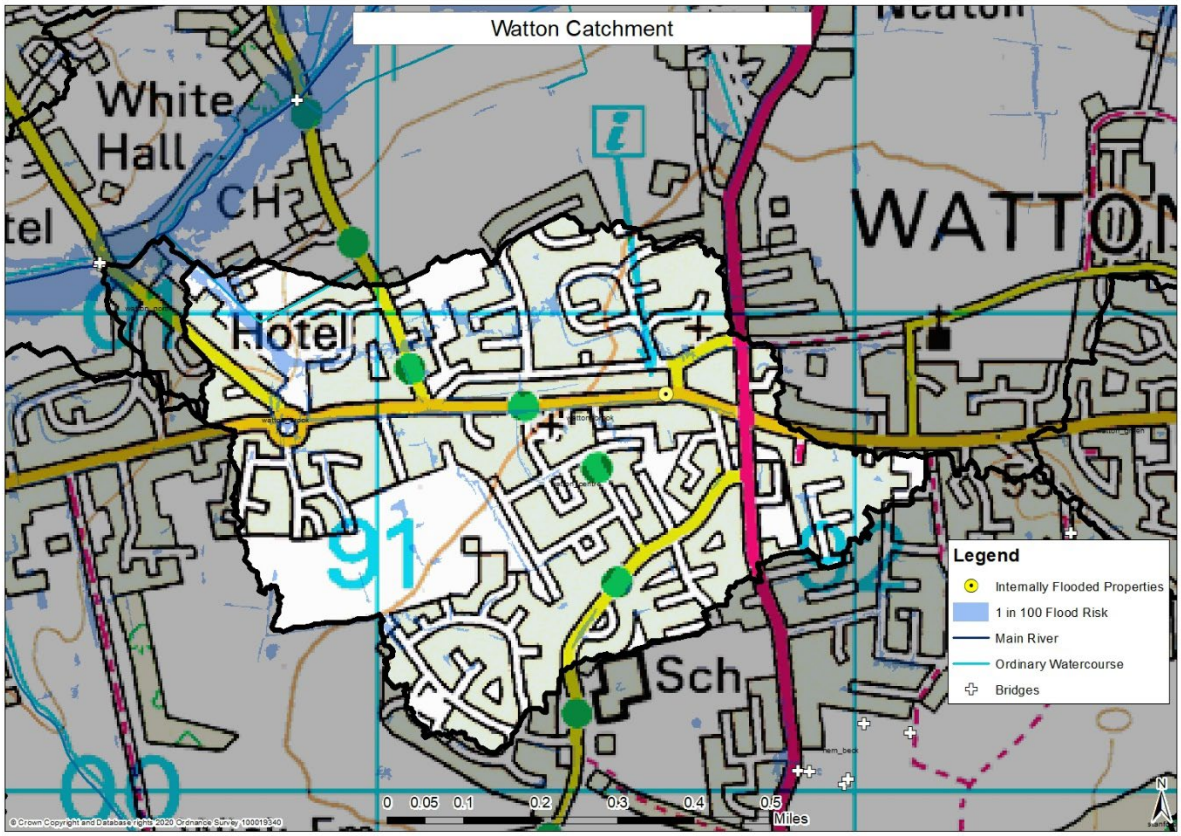
3) Norfolk County Council should:

- 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.

Location & date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Malsters Close, Mundford, 31/07/2021	The surface water drainage system was fully obstructed by high water levels downstream. This caused the failure of the upstream drainage system contributing to flooding at the affected properties. The watercourse was partially obstructed by vegetation, silt and high water levels downstream. This caused the failure of the upstream drainage system contributing to flooding at the affected properties.	Anglian Water will review the capacity & level of maintenance required to sustain the design efficiency of their drainage systems that serve the flooding location in line with the risk identified. Riparian owners should undertake maintenance within the ordinary water course to remove vegetation, silt build up to help reduce residual water levels.	Anglian Water
Malsters Close, Mundford, 31/07/2021	Run-off from 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 property. Rainfall was directed into the surface water system causing it to surcharge elsewhere. This surcharging caused the flooding at the affected property.	Anglian Water should assess whether the capacity of the current system is able to provide protection that aligns with British standards. This may require a survey of the system being undertaken. AW should work with partner organisations to identify the potential for managing the amount or rate of surface water entering their drainage system in flood events.	Anglian Water

Location & date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Malsters Close, Mundford, 31/07/2021	The flood water entered the property through low thresholds at entrance.	Property owners should protect their buildings through flood protection measures where appropriate. NCC (LLFA) will communicate with resident to advise how they may apply for grants available. Property owners could also carry out their own measures where funding is not forthcoming, or residents are unwilling to wait.	NCC (LLFA)
Malsters Close, Mundford, 31/07/2021	Run-off from rainfall was directed towards Individual property drainage. These flows could not be accommodated as the system is of insufficient capacity to deal with this amount of water. This directed flood water towards the affected property.	The property owner should determine the adequacy of the on-site drainage and where appropriate increase on-site storage capacity and system efficiency.	Property owner

Flooding and Flood Risk Within the Watton Catchment



Map showing location of flooded properties in Watton.

Flood Incidents Within this Catchment

Within this catchment one incident of internal flooding has been assessed as part of this investigation. This incident is detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
24/05/2021	On the 24/05/2021 - one property was internally flooded on Middle Street, Watton. This incident was reported by a member of the public via an online flood report form on the 8 June 2021, (FWF/21/4821)	NCC (LLFA) assessed validity and impact of the flood report after the incident.

Recent Rainfall Within the Catchment

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 2.5km 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.

There were no rain gauges within 2.5km of the incidents of flooding within this catchment.

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 the following recommendations are made in three areas:

1) 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.

2) Property owners of affected properties should seek their own legal advice.

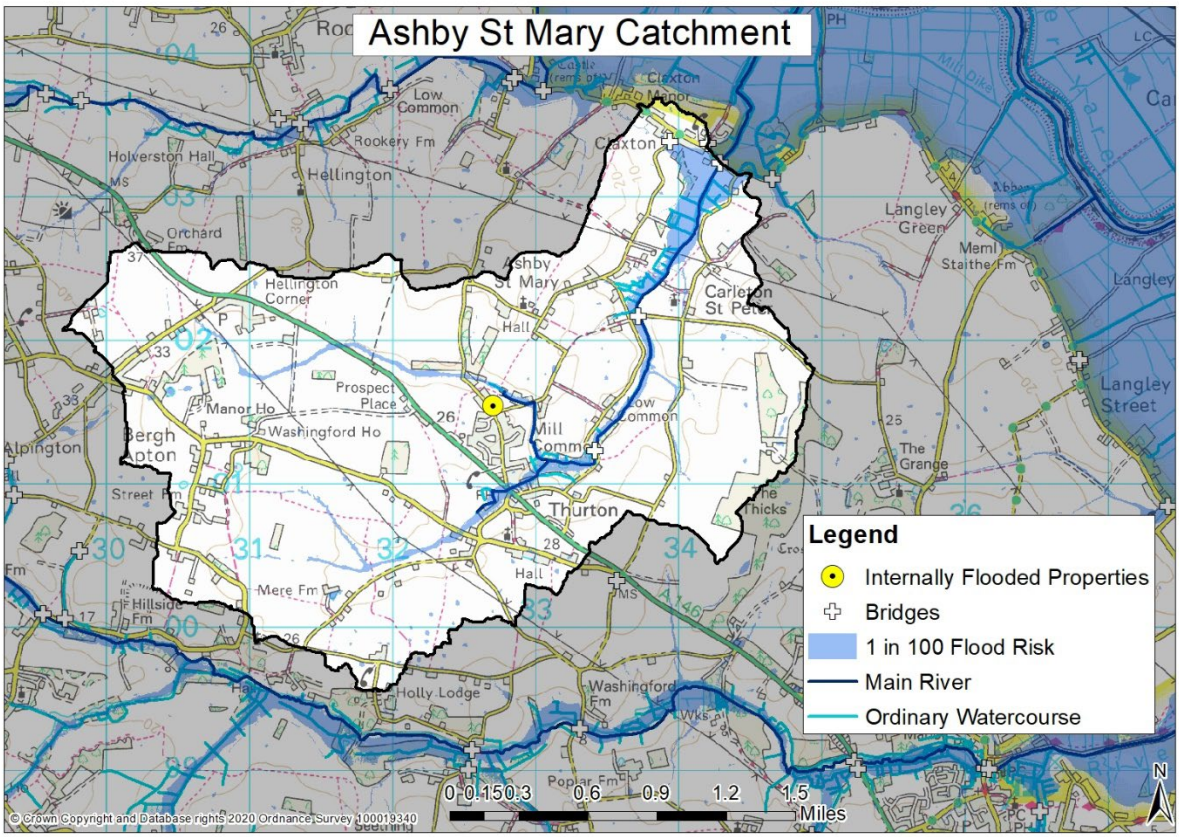
3) Norfolk County Council should:
   - Incorporate all relevant information of actual flooding into the review of the Norfolk Preliminary Flood Risk Assessment (PFRA).
   - Review and monitor the delivery of recommendations within this and other relevant flood investigation reports.

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Middle Street, Watton, 24/05/2021	Significant Surface water run-off from the rainfall event made its way onto the highway and flowed along the road network and onto the entrance of the affected property.	NCC (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.	NCC (Highways)

Street map showing location of Middle Street, Watton.

South Norfolk District Council Area

Flooding and Flood Risk Within the Ashby St. Mary Catchment



Map showing location of flooded properties in the Ashby St Mary Catchment.

Flood Incidents Within this Catchment

Within this catchment one incident of internal flooding has been assessed as part of this investigation. This incident is detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
08/07/2021	On the 08/07/2021 - one property was internally flooded on Mill Road, Ashby St. Mary. This incident was reported by a resident via an online flood report form on the 12 July 2021, (FWF/21/5165)	A resident carried out measures to minimise the impact of flooding during the incident. NCC (LLFA) assessed validity and impact of the flood report after the incident. NCC (Highways) undertook curbing works to redirect flow away from the property.

Recent Rainfall Within the Catchment

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 2.5km 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.

There were no rain gauges within 2.5km of the incidents of flooding within this catchment.

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 the following recommendations are made in three areas:

1) Risk Management Authorities should:

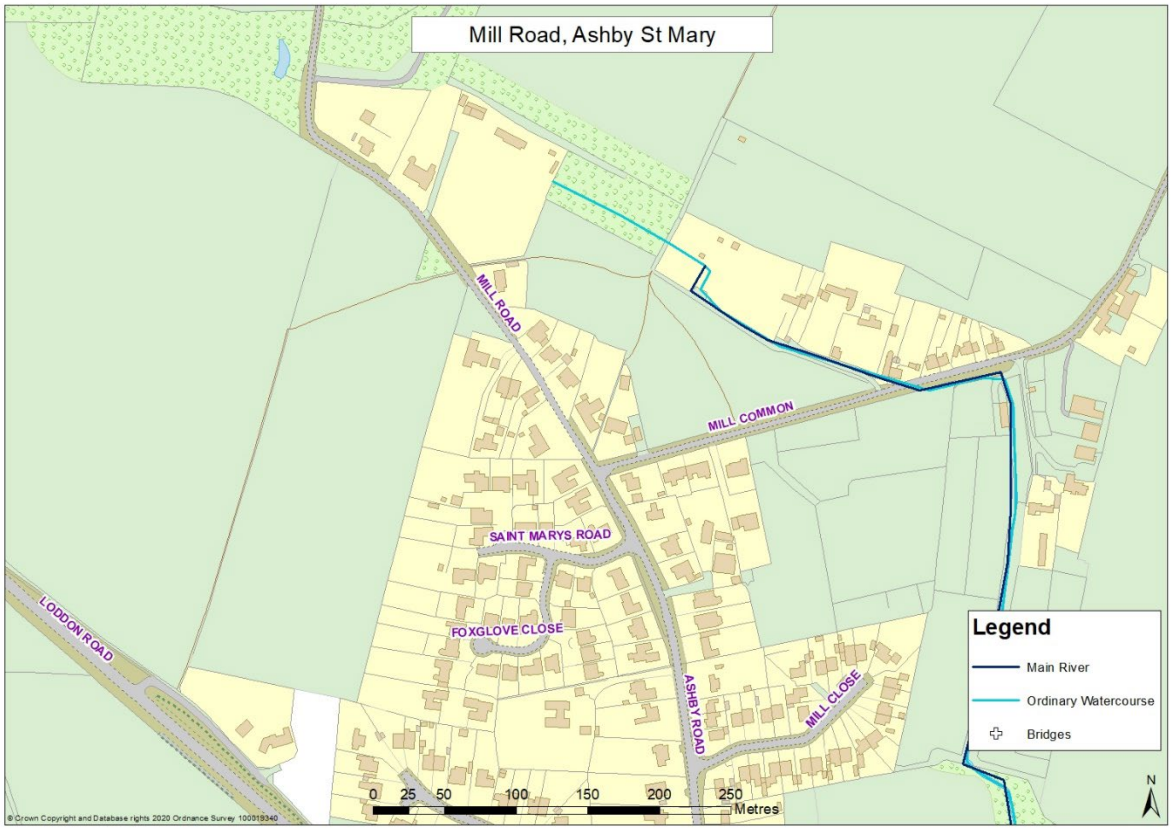
- Communicate with affected residents where their assets have given rise to the flooding of properties.

- 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.

2) Property owners of affected properties should seek their own legal advice.

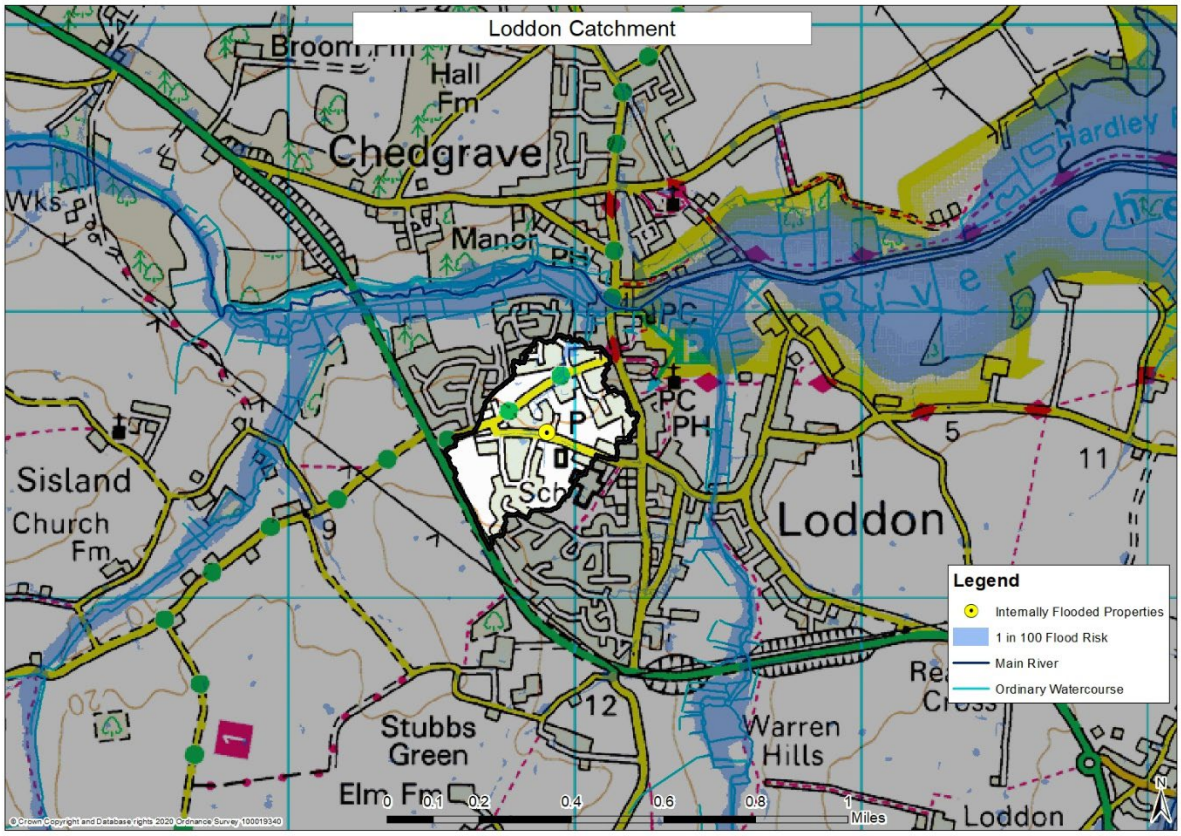
3) Norfolk County Council should:
    - Incorporate all relevant information of actual flooding into the review of the Norfolk Preliminary Flood Risk Assessment (PFRA).
    - Review and monitor the delivery of recommendations within this and other relevant flood investigation reports.

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Mill Road, Ashby St. Mary, 08/07/2021	Surface run-off from significant rainfall made its way onto highway and flowed along the road network and onto the accesses of affected properties and entered the properties.	NCC (Highways) has considered opportunities to route flood water on the highway away from affected properties to alternative points of discharge, or other solutions as practicable. Curbing works were undertaken in 2021 to achieve this.	NCC (Highways)



Street map showing location of Mill Road, Ashby St Mary.

Flooding and Flood Risk Within the Loddon Catchment



Map showing location of flooded properties in the Loddon Catchment.

Flood Incidents Within this Catchment

Within this catchment one incident of internal flooding has been assessed as part of this investigation. This incident is detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
10/09/2021	On the 10/09/2021 - 1 property was internally flooded on Kittens Lane, Loddon. This incident was reported by a member of the public via an online flood report form on the 21 September 2021, (FWF/21/5629)	NCC (LLFA) assessed validity and impact of the flood report after the incident.

Recent Rainfall Within the Catchment

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 2.5km 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.

There were no rain gauges within 2.5km of the incidents of flooding within this catchment.

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 the following recommendations are made in three areas:

1) 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.

2) Property owners of affected properties should seek their own legal advice.

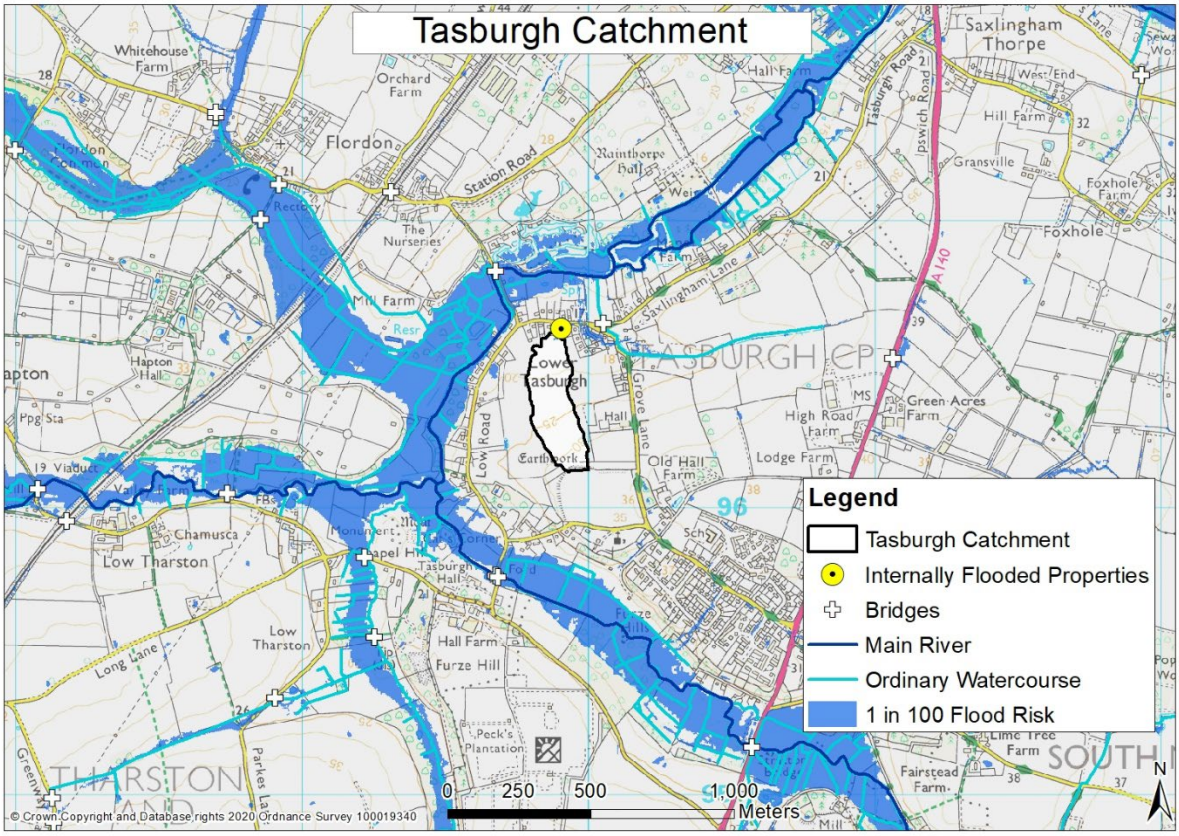
3) Norfolk County Council should:
   - Incorporate all relevant information of actual flooding into the review of the Norfolk Preliminary Flood Risk Assessment (PFRA).
   - Review and monitor the delivery of recommendations within this and other relevant flood investigation reports.

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Kittens Lane, Loddon, 10/09/2021	Significant rainfall event was directed into the surface water system causing it to surcharge elsewhere. This surcharging contributed to the flooding at the affected property.	Norfolk County Council should identify the potential for managing the amount or rate of surface water entering their drainage system in flood events. NCC (Highways) have completed this work in the area. The property owner should check their private drainage in order to ascertain any problems with its functionality and carry out maintenance where necessary.	NCC (Highways) Property Owner

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Kittens Lane, Loddon, 10/09/2021	The flood water entered the property through the front door	Property owners should protect their buildings through flood protection measures where appropriate. NCC (LLFA) will communicate with local residents to advise them how they may apply for grants available. These grants are subject to a funding application. Property owners could also carry out their own measures where funding is not forthcoming, or residents are unwilling to wait.	Property Owner NCC (LLFA)

Street map showing location of Kittens Lane, Loddon.

Flooding and Flood Risk Within the Lower Tasburgh Catchment



Map showing location of flooded properties in the Lower Tasburgh Catchment.

Flood Incidents Within this Catchment

Within this catchment one incident of internal flooding has been assessed as part of this investigation. This incident is detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
25/07/2021	On the 25/07/2021 - one property was internally flooded on Low Road, Tasburgh. This incident was reported by a resident via an online flood report form on the 27 July 2021, (FWF/21/5324). Further external flooding is reported to have occurred on Low Road.	NCC (LLFA) assessed validity and impact of the flood report after the incident and affected residents to offer advice and to gather information after the incident.

Recent Rainfall Within the Catchment

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 2.5km 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.

There were no rain gauges within 2.5km of the incidents of flooding within this catchment.

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 the following recommendations are made in three areas:

1) 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.

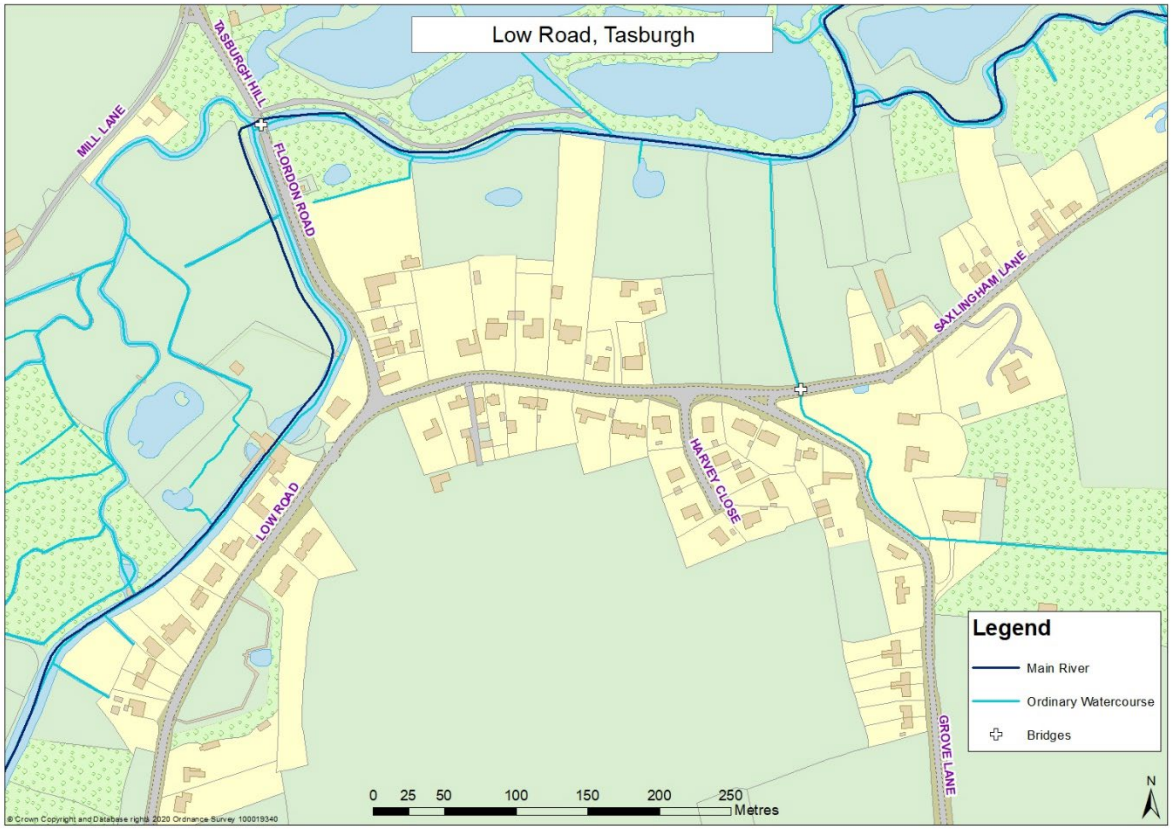
- Determine the integrity and/or capacity of their assets where they have contributed to the flooding of properties to understand the systems role in accommodating normal rainfall events as well as mitigating flooding.

2) Property owners of affected properties should seek their own legal advice.

3) Norfolk County Council 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.

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Low Road, Tasburgh, 25/07/2021	Run-off from significant rainfall was concentrated along overland flow paths on which the affected property is adjacent to.	NCC (LFA) will investigate with third parties on developing a partnership funding solution to mitigate the risk experienced at this location. This could be either through submission of a bid to secure Partnership funding or through negotiation with other organisations and the local community. It is important to note this recommendation will be subject to the priorities and availability of resources of funders. It may be dependent on those property owners affected contributing towards a solution.	NCC (LLFA)
Low Road, Tasburgh, 25/07/2021	Surface run-off from significant rainfall flowed off adjacent fields and onto the accesses of affected properties that were situated lower than these features.	Property owners should protect their buildings through flood protection measures where appropriate. NCC (LLFA) will communicate with local residents to advise them how they may apply for grants available. These grants are subject to a funding application. Property owners could also carry out their own measures where funding is not forthcoming, or residents are unwilling to wait.	NCC (LLFA), Local Landowners

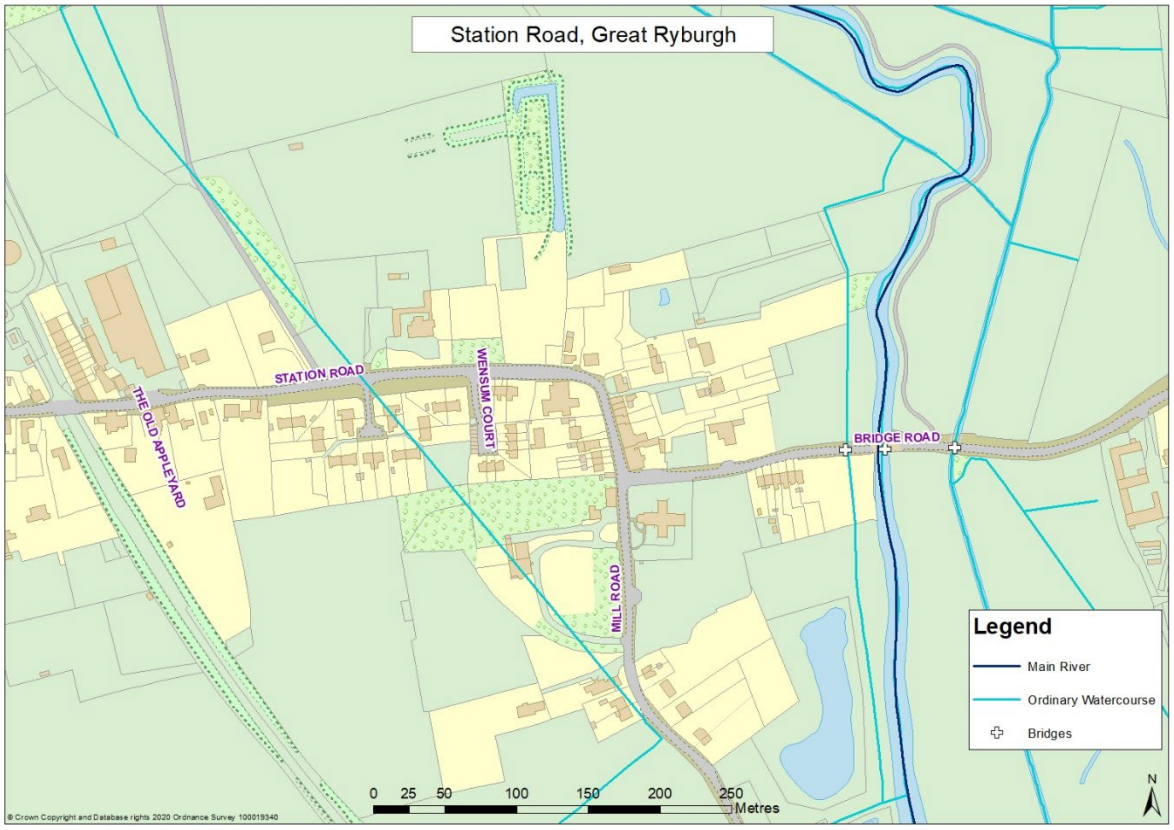
Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Low Road, Tasburgh, 25/07/2021	Due to land management localised ground conditions caused run-off to be directed quickly from where it fell as rain to the areas of flooding.	Local Landowners should investigate the potential to change land management to reduce run-off and divert it away from the affected properties	Local Landowners



Street map showing location of Low Road, Tasburgh.

North Norfolk District Council Area

Flooding and Flood Risk Within the Great Ryburgh Catchment



Street map showing location of Station Road, Great Ryburgh.

Flood Incidents Within this Catchment

Within this catchment 3 incidents of internal flooding have been assessed as part of this investigation. These incidents are detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
08/08/2021	On the 08/08/2021 - two properties were internally flooded on Station Road, Great Ryburgh. These incidents were reported by: a resident via email correspondence on the 19 January 2022, (FWF/22/6162) a resident via an online flood report form on the 19 January 2022, (FWF/22/6163)	NCC (LLFA) visited affected residents to offer advice and to gather information after the incident. Anglian Water visited to investigate a pollution issue linked to the flooding incident after the incident. NCC (LLFA)assessed validity and impact of the flood report after the incident.

Date of Incident	Incident as reported	What was the response to the flood incident
24/05/2021	On the 24/05/2021 - one property was internally flooded on Station Road, Great Ryburgh. This incident was reported by a resident via an online flood report form on the 10 June 2021, (FWF/21/4822)	NCC (LLFA) visited affected residents to offer advice and to gather information after the incident. Anglian Water visited to investigate a pollution issue linked to the flooding incident after the incident. NCC (LLFA) assessed validity and impact of the flood report after the incident.

Recent Rainfall Within the Catchment

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 2.5km 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.

There were no rain gauges within 2.5km of the incidents of flooding within this catchment.

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 the following recommendations are made in three areas:

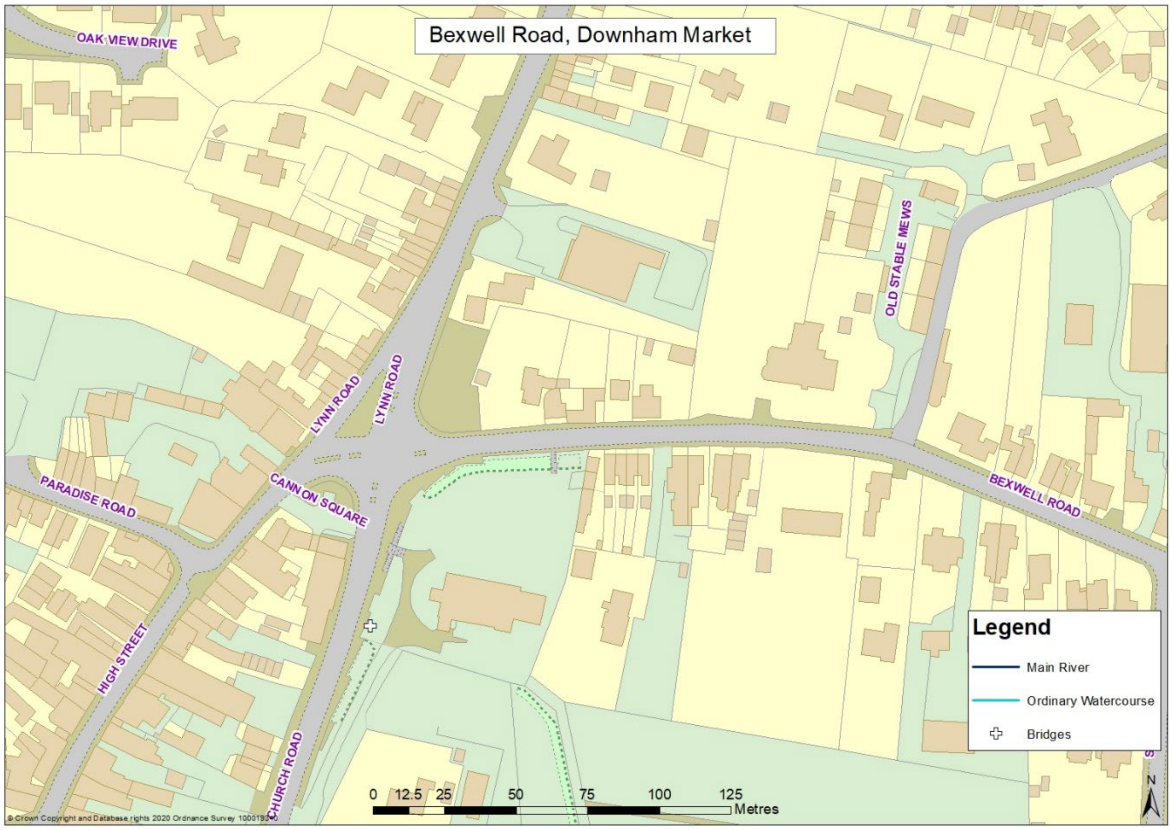
1) Risk Management Authorities should
   - Communicate with affected residents where their assets have given rise to the flooding of properties.
   - Review the appropriateness of their response to flooding.
   - Determine the integrity and/or capacity of their assets where they have contributed to the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

2) Property owners of affected properties should seek their own legal advice.

3) Norfolk County Council 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.

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Station Road, Great Ryburgh, 08/08/2021 Station Road, Great Ryburgh, 24/05/2021	Surface run-off from significant rainfall made its way onto highway and flowed along the road network and onto the accesses of affected properties that were situated lower than these features.	NCC (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.	NCC (Highways)
Station Road, Great Ryburgh, 08/08/2021 Station Road, Great Ryburgh, 24/05/2021	Run-off from significant rainfall was directed towards the foul 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 ingress of surface water into existing foul drainage networks. This caused the foul drainage to surcharge into the affected properties	Anglian Water should work with partner organisations to identify the potential for managing the amount or rate of surface water entering their drainage system in flood events. This could include a range of measures e.g., Anglian Water to investigate sealing manholes or using low-leak lids where safe to do so. Checks should be undertaken that no residual flooding elsewhere in the system by sealing problem manholes. Anglian Water to investigate foul sewer and private connections and consider non return valves where practical and where they do not increase risk elsewhere.	Anglian Water

Borough Council of King's Lynn and West Norfolk Area
Flooding and Flood Risk Within the Downham Market Catchment



Description of Catchment

Suburban catchment

Flood Incidents Within this Catchment

Within this catchment one incident of internal flooding has been assessed as part of this investigation. This incident is detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
20/07/2021	On the 20/07/2021 - one property was internally flooded on Bexwell Road, Downham Market. This incident was reported by a member of the public via an online flood report form on the 20 July 2021, (FWF/21/5292)	NCC (LLFA) assessed validity and impact of the flood report after the incident.

Recent Rainfall Within the Catchment

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 2.5km 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.

There were no rain gauges within 2.5km of the incidents of flooding within this catchment.

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 the following recommendations are made in three areas:

1) 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.

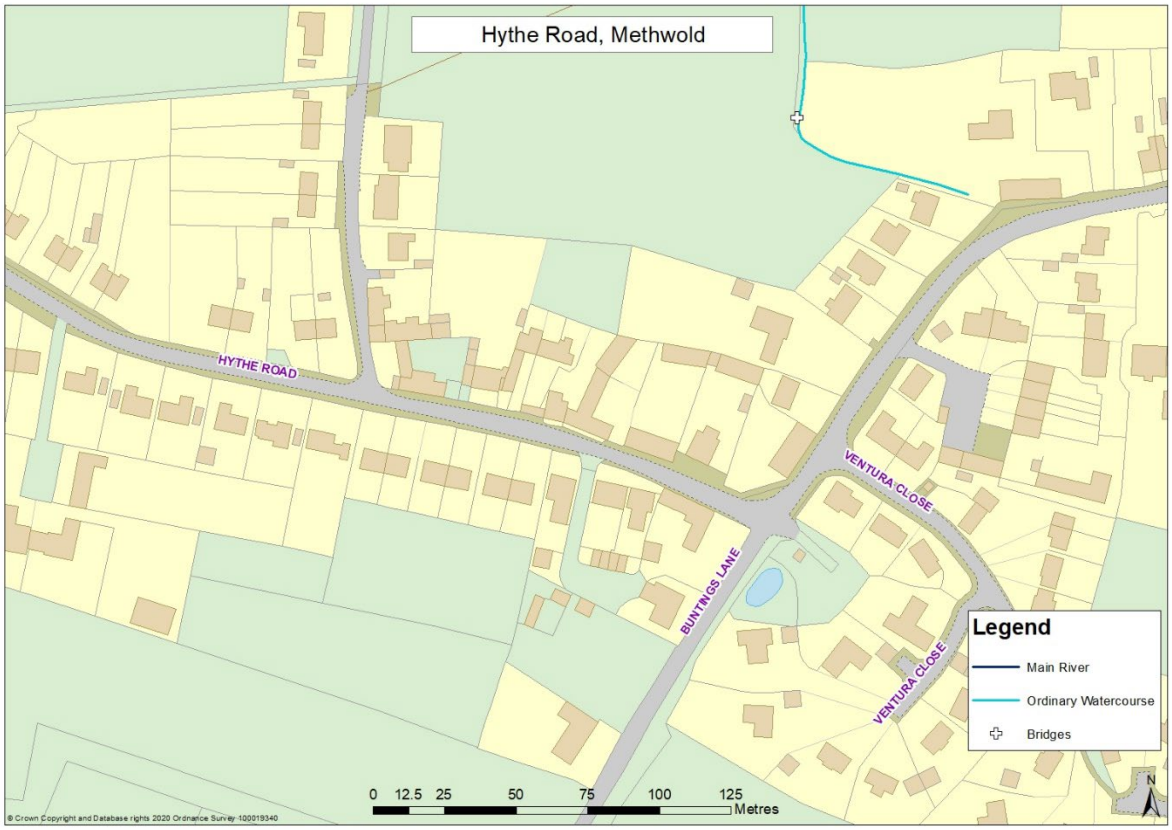
- Determine the integrity and/or capacity of their assets where they have contributed to the flooding of properties to understand the systems role in accommodating normal rainfall events as well as mitigating flooding.

2) Property owners of affected properties should seek their own legal advice.

3) Norfolk County Council 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.

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Bexwell Road, Downham Market, 20/07/2021	Significant surface run-off from the rainfall event made its way onto the highway and flowed along the road network and onto the accesses of the affected property.	NCC (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.	NCC (Highways)
Bexwell Road, Downham Market, 20/07/2021	The flood water entered the property through the front entrance.	Property owners should protect their buildings through flood protection measures where appropriate. NCC (LLFA) will communicate with local residents to advise them how they may apply for grants available. These grants are subject to a funding application. Property owners could also carry out their own measures where funding is not forthcoming, or residents are unwilling to wait. Property Owners should consider the potential to retrofit permeable areas and other methods of small-scale sustainable drainage systems.	NCC (LLFA) Property Owner

Flooding and Flood Risk Within the Methwold Catchment



Street map showing location of Hythe Road, Methwold.

Description of Catchment

Semi-rural catchment

Flood Incidents Within this Catchment

Within this catchment one incident of internal flooding has been assessed as part of this investigation. This incident is detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
27/07/2021	On the 27/07/2021 - one property was internally flooded on Hythe Road, Methwold. This incident was reported by a member of the public via an online flood report form on the 30 July 2021, (FWF/21/5347)	NCC (LLFA) assessed validity and impact of the flood report after the incident.

Recent Rainfall Within the Catchment

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 2.5km 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.

There were no rain gauges within 2.5km of the incidents of flooding within this catchment.

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 the following recommendations are made in three areas:

1) 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.

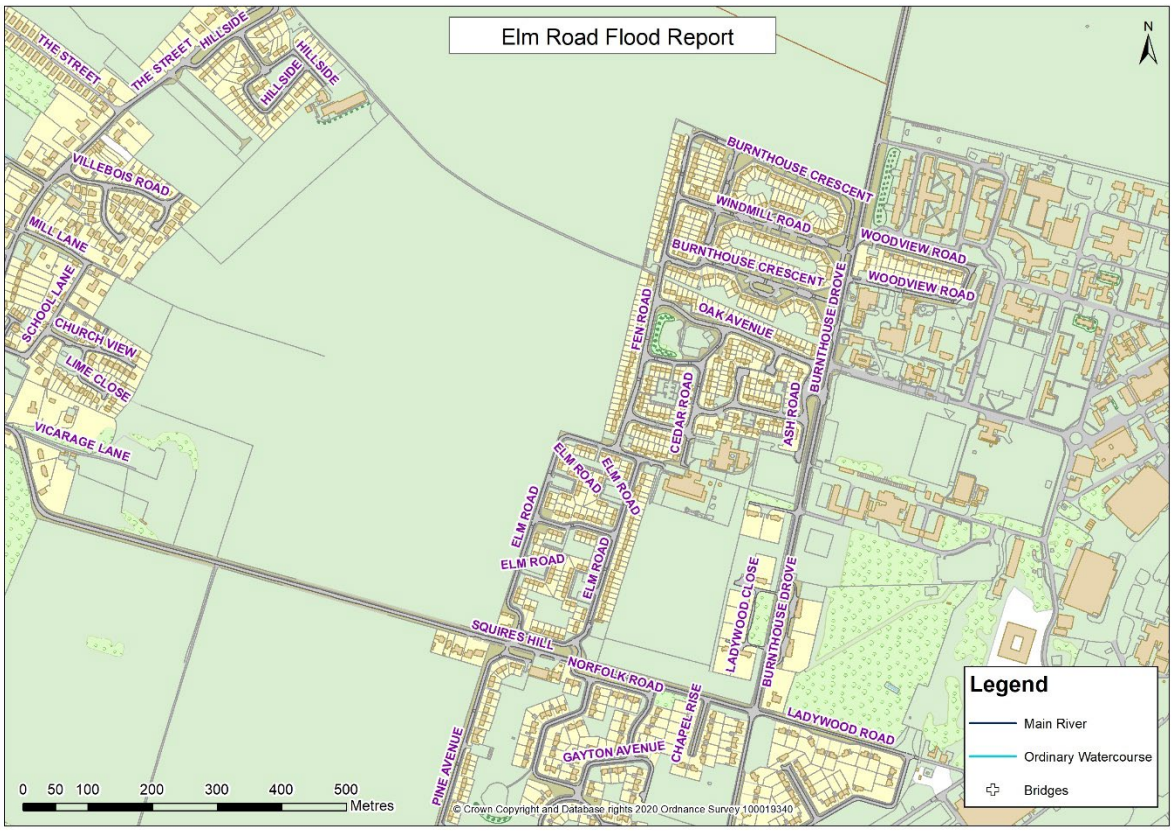
2) Property owners of affected properties should seek their own legal advice.

3) Norfolk County Council 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.

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Hythe Road, Methwold, 27/07/2021	Significant run-off from the rainfall event pooled on the road, which was the low point within the catchment, affecting the property.	NCC (LLFA) will investigate with third parties a partnership funding solution to mitigate the risk experienced at this location. This could be either through submission of a bid to secure Partnership funding or through negotiation with other organisations and the local community. It is important to note this recommendation will be subject to the priorities and availability of resources of funders. It may be dependent on those property owners affected contributing towards a solution.	NCC (LLFA)
Hythe Road, Methwold, 27/07/2021	Significant surface water run-off from the rainfall event made its way onto the highway and flowed along the road network and onto the access of the affected property.	NCC (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.	NCC (Highways)

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Hythe Road, Methwold, 27/07/2021	Significant surface water run-off from the rainfall event made it on the highway. Vehicles using the highway passed through the flood water causing it to wash towards the affected property.	Norfolk County Council will consider options that would prevent water from pooling on the highway.	NCC (Highways)

Flooding and Flood Risk Within the Marham Catchment



Street map showing location of Elm Road, Marham.

Description of Catchment

The location of the flooded properties is semi-rural with the affected properties being within a village housing estate.

Flood Incidents Within this Catchment

Within this catchment two incidents of internal flooding have been assessed as part of this investigation. These incidents are detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
14/09/2021	On the 14/09/2021 - one property was internally flooded on Elm Road, Marham. This incident was reported by the Fire and Rescue Service via an electronic report on the 15 October 2021, (FWF/21/5758)	The Fire and Rescue Service responded and pumped out during the incident. NCC (LLFA) assessed validity and impact of the flood report after the incident.
27/07/2021	On the 27/07/2021 - one property was internally flooded on Elm Road, Marham. This incident was reported by Norfolk County Council (Highways) via an electronic report on the 13 August 2021, (FWF/21/5486)	NCC (LLFA) assessed validity and impact of the flood report after the incident.

Recent Rainfall Within the Catchment

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 2.5km 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.

Two of the incidents (100%) of internal flooding in this catchment are within 2.5km of a rain gauge.

Data from rain gauges located in Marham Rain Gauge has been analysed to ascertain the intensity of the rainfall events experienced in the catchment. This analysis was useful in assessing (in broad terms) if the design capacity of drainage systems within the affected areas were exceeded. However, to ensure that any analysis reflects the localised nature of these events a 2.5km radius from these instruments has been used.

The rainfall events recorded by gauges for this catchment are:

27 July 2021 – 10.2mm of rainfall was recorded as falling in 1 hours at the Marham Rain Gauge rainfall monitoring station. This intensity of rainfall for the total duration equates to a 2-year rainfall event.

14 September 2021 – 34.6mm of rainfall was recorded as falling in 8 hours at the Marham Rain Gauge rainfall monitoring station. This intensity of rainfall for the total duration equates to a 3.7-year rainfall event.

Historic Flooding Incidents Within the Location

There is no historic flooding at this location.

Causes of Flooding Within the Location 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 the following recommendations are made in three areas:

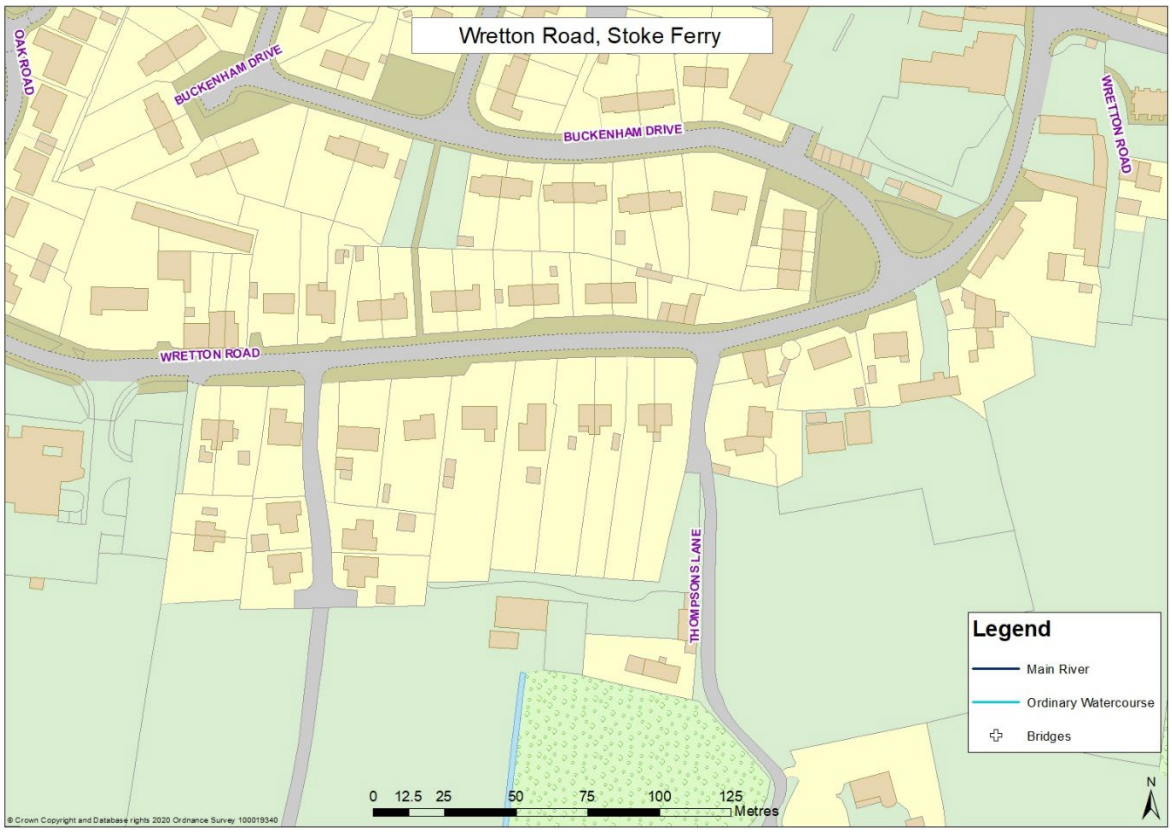
1) Risk Management Authorities should:
    - Communicate with affected residents where their assets have given rise to the flooding of properties.
    - Review the appropriateness of their response to flooding.
    - Determine the integrity and/or capacity of their assets where they have contributed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

2) Property owners of affected properties should seek their own legal advice.

3) Norfolk County Council 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.

Location and date of flooding	Causes of flooding	Recommendation	Who has responsibilities to manage the cause(s) of the flood?
Elm Road, Marham, 14/09/2021 Elm Road, Marham, 27/07/2021	Rainfall was concentrated on the highway. Vehicles using the highway passed through the flood water causing it to wash towards the affected properties.	NCC (Highways) will consider options that would prevent water from pooling on the highway.	NCC (Highways)
Elm Road, Marham, 14/09/2021 Elm Road, Marham, 27/07/2021	The flood water entered the properties through low thresholds at entrances.	Property owners should protect their buildings through flood protection measures where appropriate. NCC (LLFA) will communicate with residents to advise them how they may apply for grants available. These grants are subject to a funding application. Property owners could also carry out their own measures where funding is not forthcoming, or residents are unwilling to wait.	Property owners

Flooding and Flood Risk Within the Stoke Ferry Catchment



Street map showing location of Wretton Road, Stoke Ferry.

Description of Catchment

Semi-urban catchment

Flood Incidents Within this Catchment

Within this catchment one incident of internal flooding has been assessed as part of this investigation. These incidents are detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
27/07/2021	On the 27/07/2021 - one property was internally flooded on Wretton Road, Stoke Ferry. This incident was reported by Norfolk County Council (Highways) via an electronic report on the 20 August 2021, (FWF/21/5483)	NCC (LLFA) assessed validity and impact of the flood report after the incident.

Recent Rainfall Within the Catchment

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 2.5km 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.

There were no rain gauges within 2.5km of the incidents of flooding within this catchment.

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 the following recommendations are made in three areas:

1) 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.

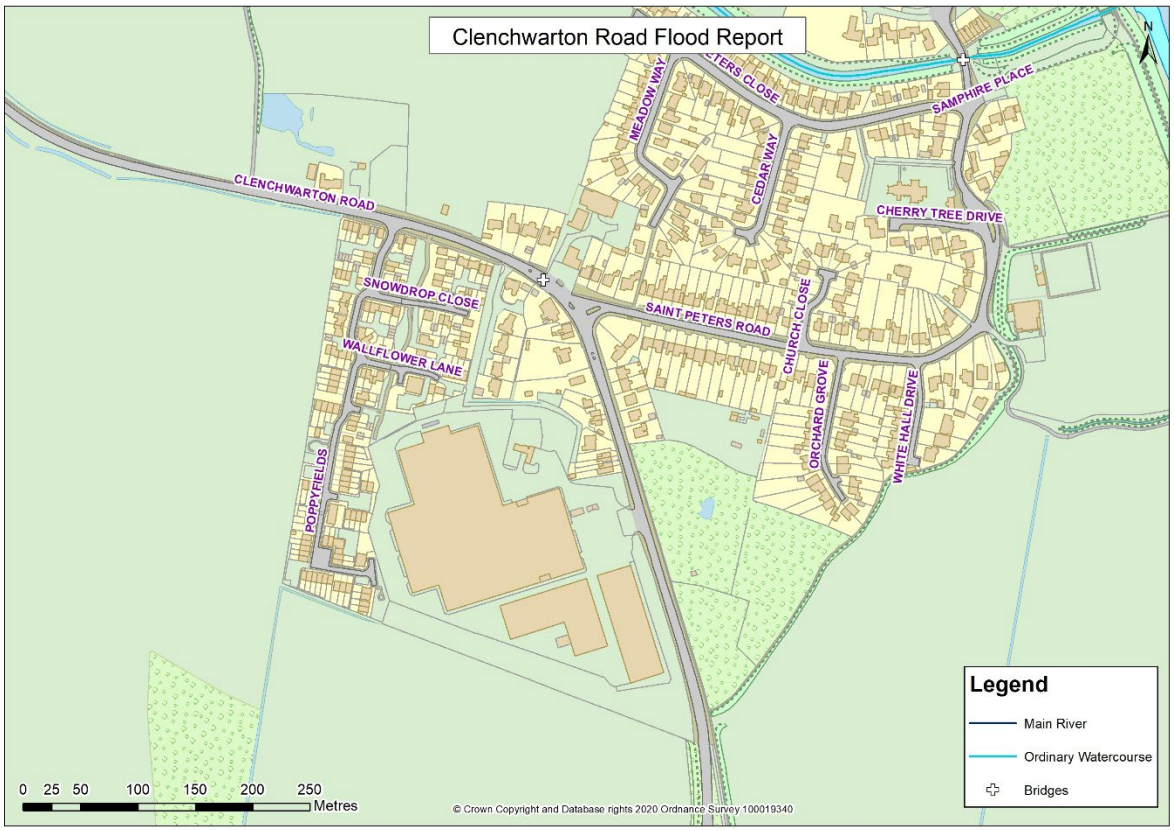
- Determine the integrity and/or capacity of their assets where they have contributed to the flooding of properties to understand the systems role in accommodating normal rainfall events as well as mitigating flooding.

2) Property owners of affected properties should seek their own legal advice.

3) Norfolk County Council 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.

Location and date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Wretton Road, Stoke Ferry, 27/07/2021	Significant surface water run-off from the rainfall event made its way onto the highway and flowed along the road network and onto the accesses of the affected property that was situated lower than these features.	NCC (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.	Norfolk County Council (Highways)
Wretton Road, Stoke Ferry, 27/07/2021	The flood water entered the property through the front entrance.	Property owners should protect their buildings through flood protection measures where appropriate. NCC (LLFA) will communicate with local residents to advise them how they may apply for grants available. These grants are subject to a funding application. Property owners could also carry out their own measures where funding is not forthcoming, or residents are unwilling to wait.	NCC (LLFA) Property Owner

Flooding and Flood Risk Within the West Lynn Catchment



Street map showing location of Clenchwarton Road, West Lynn.

Description of Location

The affected property is situated in a rural location adjacent to a C class road within the Water Management Alliance King's Lynn IDB area.

Flood Incidents Within this Catchment

Within this catchment one incident of internal flooding has been assessed as part of this investigation. This incident is detailed in the table below.

Date of Incident	Incident as reported	What was the response to the flood incident
14/09/2021	On the 14/09/2021 - one property was internally flooded on Clenchwarton Road, West Lynn. This incident was reported by the Fire and Rescue Service via an electronic report on the 15 October 2021, (FWF/21/5759)	The Fire and Rescue Service responded and pumped out during the incident. NCC (LLFA) assessed validity and impact of the flood report after the incident. Anglian Water carried out measures to minimise the impact of flooding after the incident.

Recent Rainfall Within the Catchment

There were no rain gauges within 2.5km of the incidents of flooding within this catchment.

Historic Flooding Incidents Within the Catchment

There is no historic flooding at this location.

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 the following recommendations are made in three areas:

1) 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.

2) Property owners of affected properties should seek their own legal advice.

3) Norfolk County Council 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.

Location & date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Clenchwarton Road, West Lynn, 14/09/2021	The surface water/foul drainage system was potentially obstructed by debris/silt and/or high-water levels. This reduced the efficiency of the upstream drainage system contributing to flooding at the affected properties.	Anglian Water will review the capacity & level of maintenance required to sustain the design efficiency of their drainage systems that serves the flooded location in line with risk identified. Anglian Water should assess whether the capacity of the current system is able to provide protection that aligns with British standards. This may require a survey of the system being undertaken. Anglian Water to investigate foul sewer and establish whether system is in fact a combined system, is blocked or has insufficient capacity. Property owner should instigate a regular regime of maintenance to ensure the system is free from obstruction.	Anglian Water & Property owner

Location & date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Clenchwarton Road, West Lynn, 14/09/2021	Run-off from rainfall was directed towards the surface water/foul drainage network. These flows could not be accommodated as the system was already overloaded. This directed flood water towards the affected property.	Anglian Water should work with partner organisations to identify the potential for managing the amount or rate of surface water entering their drainage system in flood events. Anglian Water to investigate foul sewer and private connections and consider non return valves where practical and where they do not increase risk elsewhere.	Anglian Water
Clenchwarton Road, West Lynn, 14/09/2021	Run-off from rainfall was directed towards Individual property drainage. These flows could not be accommodated as the system is of insufficient capacity to deal with this amount of water. This directed flood water towards the affected property.	The property owner should determine the adequacy of the on-site drainage and where appropriate increase on-site storage capacity and system efficiency.	Property owner

Location & date of flooding	Causes of flooding	Recommendation	Risk Management Authority/ Individual with Relevant Flood Risk Roles
Clenchwarton Road, West Lynn, 14/09/2021	The flood water entered the property through low thresholds at entrances.	Property owners should protect their buildings through flood protection measures where appropriate. NCC (LLFA) will communicate with residents to advise them how they may apply for grants available. Property owners could also carry out their own mitigation measures to reduce the impact of flooding such as installing a sump pump.	NCC (LLFA)

Disclaimer

Although every effort has been taken to ensure the accuracy of the information contained within the pages of the report, it cannot be guaranteed 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.

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, where:

a) Basements and below ground level floors are included.
b) Garages are included if in the fabric of the building. Garages adjacent or separate from the main building are not included.
c) 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, where;

a) '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.
b) 'Groundwater' means all water which is below the surface of the ground and in direct contact with the ground or subsoil.
c) '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.

What is a Catchment?

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.

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)

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

2. District, City and Bough Councils

a) Powers to undertake works on ordinary watercourses outside of IDB areas.
b) The Local Planning Authority for their District area and determine the appropriateness of developments and their exposure and effect on flood risk.
c) Duties as a Category 1 Responder for Emergency Planning.

3. Internal Drainage Boards (IDBs)

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

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

a) Powers to undertake works to manage water on the highway and to move water off the highway.
b) Enforcement powers to unauthorised alterations, obstructions, and interferences with highway drainage.

c) 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

a) Undertake cost beneficial capital schemes to alleviate or eliminate flooding where the flood event is associated with a failure of their assets.
b) Duty to provide, improve, maintain, and operate systems of public sewers and works for the purpose of effectually draining an area.
c) Are responsible for flooding from their foul, combined and surface water sewers, and from burst water mains.
d) 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.
e) 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.
f) Duties as a Category 2 Responder for Emergency Planning.

6. Riparian Owners

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