Section 19 Flood and Water Management Act 2010

Worlingworth Flood Investigation – Storm Babet October 2023

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Date Published		02/10/2024
Date Report Closed		

Contents

List of figures

Executive Summary

Storm Babet caused significant disruption to communities across Suffolk between 18th-21st October 2023. Worlingworth was a community that was significantly impacted, with over 30 properties suffering internal flooding as well as disruption to infrastructure and services. Suffolk County Council, as Lead Local Flood Authority, have therefore undertaken a Section 19 Flood Investigation. The resulting report will:

- highlight the probable causes of flooding;
- identify options to reduce future flood risk and increase property resilience; and
- make recommendations for actions by relevant responsible organisations, landowners or homeowners.

Worlingworth is located in an area at significant risk of flooding, this predominantly being pluvial (surface water) flooding, however fluvial (watercourses) flooding is also present. The nature of the surrounding topography and geology contributes to the susceptibility of the village to flooding. Most of the village has very shallow topography, with localised areas prone to 'ponding'. There are significant flow routes within the community, predominantly travelling west to east through the village, as well as south to north in the eastern part of the settlement. The local geology and soils are characterised as having low permeability and high run off, making a high number of properties in Worlingworth vulnerable to flooding due to intense rainfall events.

Storm Babet delivered significant rainfall to the catchment, following an extended period of above average rainfall. Impacts within Worlingworth were widespread and for the purposes of this report, the affected areas have been categorised into three distinct zones. The description of the flood events detailed in the report have been compiled using data submitted to Suffolk County Council, as well as information from Risk Management Authorities (e.g. Suffolk County Council Highways and Anglian Water) and the community.

A comprehensive summary for each zone is provided within the report, outlining the context of the event and the impact. Key findings are that Worlingworth was severely impacted by flooding due to the intensity of rainfall, that overwhelmed the natural flow routes and the capacity of watercourses and drainage infrastructure. This situation was compounded when overland flow paths converged and saw the resultant internal flooding of property, infrastructure, and services.

Short, medium and longer term recommendations have been published and each have a potential role to improve resilience and reduce the risk of flooding to Worlingworth. For short term measures, key highlights include the implementation of community flood plans, maximising Property Flood Resilience (PFR) grants, removal of blockages within watercourses, both open and piped, as well as investigations into local drainage infrastructure. For medium to longer term recommendations, there is emphasis of the investigation of potential improvements to drainage infrastructure (both authority and individual), localised water management schemes to reduce the overwhelming of infrastructure and the creation of new natural flood management features, to reduce flood risk within the catchment.

Justification for Investigation

Suffolk County Council, Lead Local Flood Authority (LLFA) has determined that in accordance with our criteria, it is considered necessary and appropriate to carry out an investigation into this flood event.

This is in accordance with Section 19 (1) of the Flood and Water Management Act 2010, and in accordance with Section 19 (2) of the Flood and Water Management Act 2010, to publish the results and notify the relevant risk management authorities (RMAs).

Section 19 Local authorities: investigations

(1) On becoming aware of a flood in its area, a lead local flood authority must, to the extent that it considers it necessary or appropriate, investigate—

> *(a) which risk management authorities have relevant flood risk management functions, and*
>
> *(b) whether each of those risk management authorities has exercised, or is proposing to exercise, those functions in response to the flood.*

(2) Where an authority carries out an investigation under subsection (1) it must—

> *(a) publish the results of its investigation, and*
>
> *(b) notify any relevant risk management authorities*

Criteria for an investigation (as per Appendix D of the Suffolk Flood Risk Management Strategy):	
There was a risk to life because of flooding?	
Internal flooding of one property (domestic or business) has been experienced on more than one occasion?	
Internal flooding of five properties has been experienced during one single flood incident	✓
Where a major transport route was closed for more than 10 hours because of flooding	
Critical infrastructure was affected by flooding	
There is ambiguity surrounding the source or responsibility of a flood incident	

Understanding the flood context

1. What happened during Storm Babet?

A succession of weather fronts between the 11th and 13th of October 2023 brought significant rainfall to the region. Readings indicate that between 30mm and 50mm of rain fell across Suffolk compared with an average of just less than 65mm across the whole month of October according to Meteorological Office weather data (Met Office, 1991-2020). This significant rainfall in a short space of time resulted in saturated land and rivers reaching their capacity. Shortly after this, Storm Babet followed on the 18th to 21st of October 2023 with rainfall measured near to 50mm, with some Suffolk weather stations recording the wettest October day on record; 48.2mm at Wattisham on the 19th (63 years), 46.0mm at Charsfield on 19th (57 years).

Environment Agency River level measuring stations indicated several flows close to or exceeding their highest on record and the weather remained wetter than average for the rest of the month. October 2023 was the joint wettest on record in the east of England since 1871. During Storm Babet Suffolk saw the heaviest rainfall across East Anglia causing significant and rapid flooding of roads and properties. The river systems rose rapidly across whole catchments due to the existing conditions; this was unusual as storms will often impact a small area and result in a steady progression of flood water downstream. A major incident was declared by the Suffolk Resilience Forum (SRF), in the afternoon of the 20th of October due to significant impacts on communities and disruption to the road and rail networks.

The following maps illustrate the average rainfall in East Anglia between July and October 2023 against the historical average monthly rainfall.

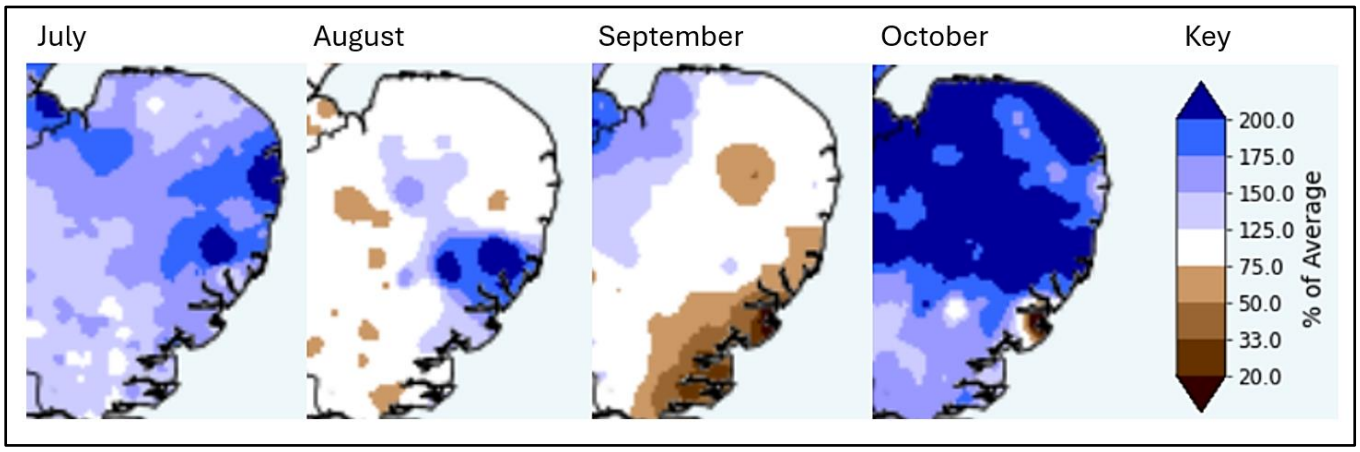

Figure 1 - Average monthly rainfall in East Anglia between July and October 2023 as a percentage of the historic average monthly rainfall

The following report acknowledges that October 2023, and particularly Storm Babet, was an extreme event and will assess the probable causes of associated flooding and impacts. The report will recommend measures to reduce the risk of flooding within the location, in line with best practice, and will range from large to small scale interventions and be targeted at a range of stakeholders. It should be noted that Storm Babet was a significant event, with a low probability of recurrence. The

recommendations will provide advice about reducing flood risk, they should not be relied upon as a guaranteed failsafe to mitigate against all future flooding.

2. Location of Flooding

Worlingworth is a medium sized village located in the district of mid Suffolk. It is situated between the major road networks of the A140 (approximately 10km to the west), the A12 (approximately 16km to the east) and north of the county town of Ipswich (approximately 24km).

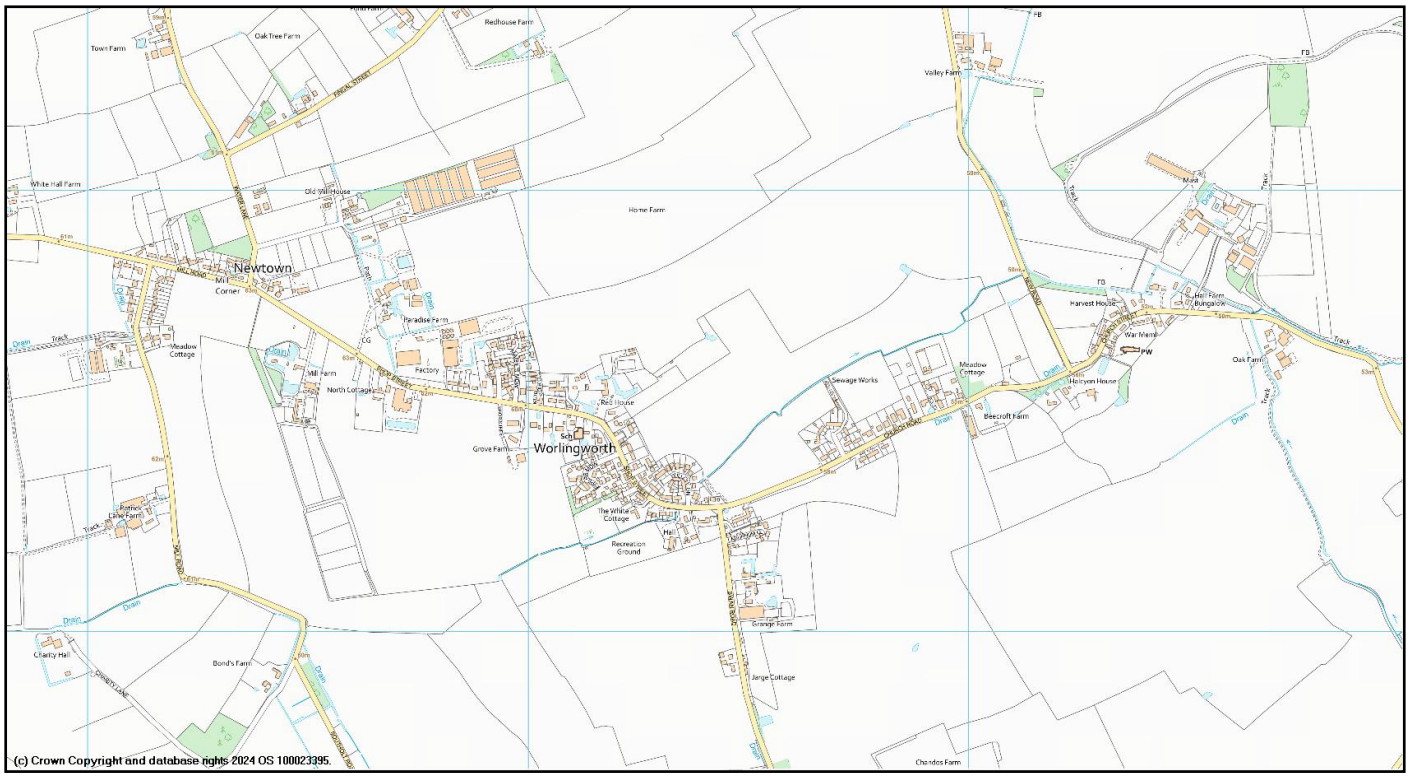

Figure 2 - Investigation area map

On the 20th of October 2023, Storm Babet resulted in significant rainfall in Suffolk on top of an already wetter than average October. This caused internal flooding to properties, residential and commercial, across the county from various flooding sources. The following report is focused on Worlingworth and the surrounding areas and will discuss the possible sources of the event, the observed flow paths through the community, and the receptors which have been affected.

Worlingworth was significantly impacted with over 30 properties reporting internal flooding. Flood water was described as coming from several sources including surface water runoff from surrounding fields (pluvial), the over topping of local watercourses (fluvial) and overwhelmed sewerage and drainage systems. Within this report, the term 'flood water' may be used to describe all types of flooding.

For the purposes of this investigation the various areas affected by flooding have been separated into three distinct zones:

1. West – Newtown & Mill Road
2. Central – Church Road, Shop Street, Old Stores Close, Willow Tree Yard & Willow Green

3. East – Church Street & Worlingworth Hall Farm

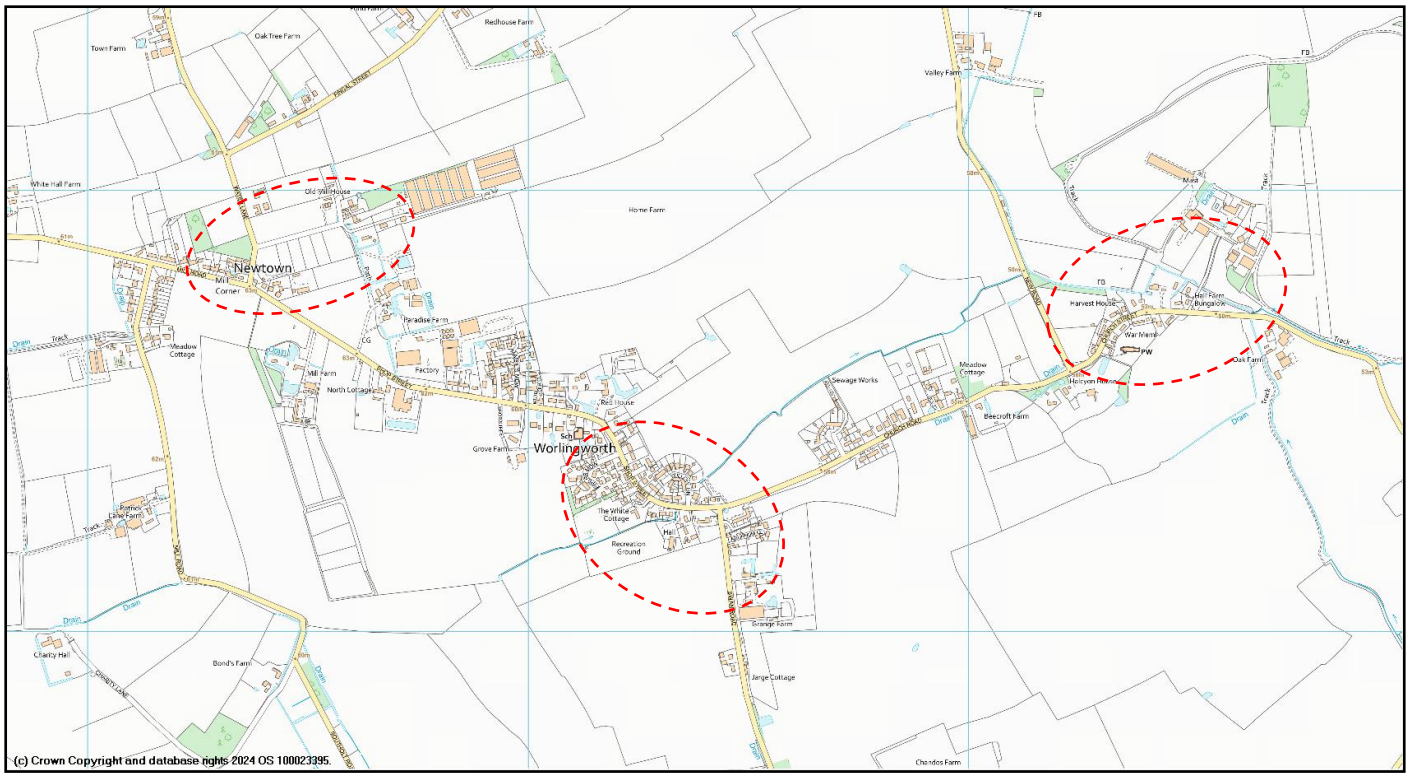

Figure 3 - Investigation area map with zones

3. Records of any historical flooding

Worlingworth has been affected by flooding in the recent past, with a significant high-risk event being reported in 2012. The event did not trigger a Section 19 investigation, although internal property was affected on this occasion.

A regular issue of highway flooding is known in the centre of the village where water overwhelms existing drainage in the area causing flooding to the highway. There is a similar issue relating to the foul network, which has frequent reports of manhole flooding during high rainfall events. Surcharging has been experienced on Shop Street and could be related to surface water infiltration or a leak. Investigations from Anglian Water are ongoing in relation to this matter.

4. Predicted flood risk

Worlingworth has a significant surface water flow path that runs from west to east through the centre of the village. Most of the affected properties in central Worlingworth fall within areas at high risk of surface water flooding. Additionally, there are localised high and medium risk areas to the west of the catchment which concur with the flooding experienced during Storm Babet.

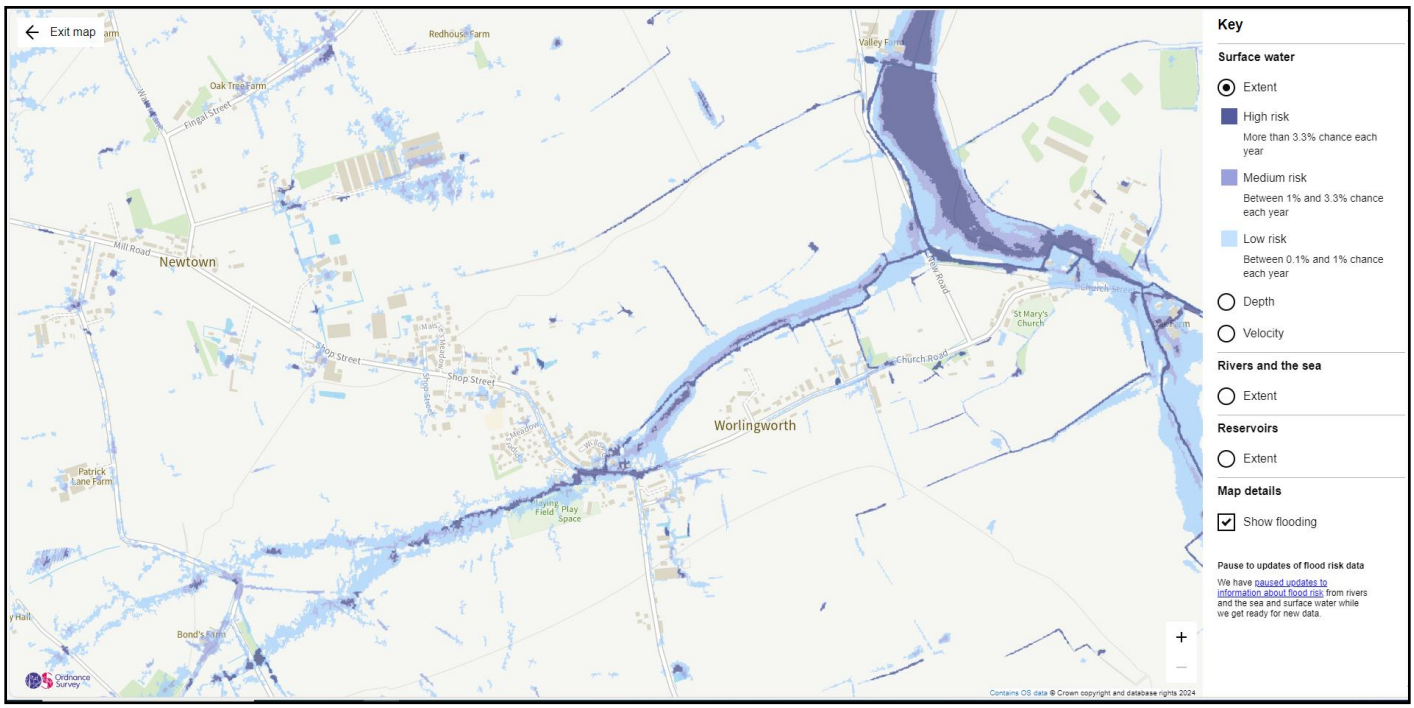

Figure 4 - Predicted flood risk from surface water

Fluvial flood risk within Worlingworth is less significant and is isolated to the East of the catchment where there is a large flood plain and associated watercourses. The Fluvial (watercourse) flood map identifies a large watercourse running adjacent to New Road, the land to the east of which is identified as flood plain.

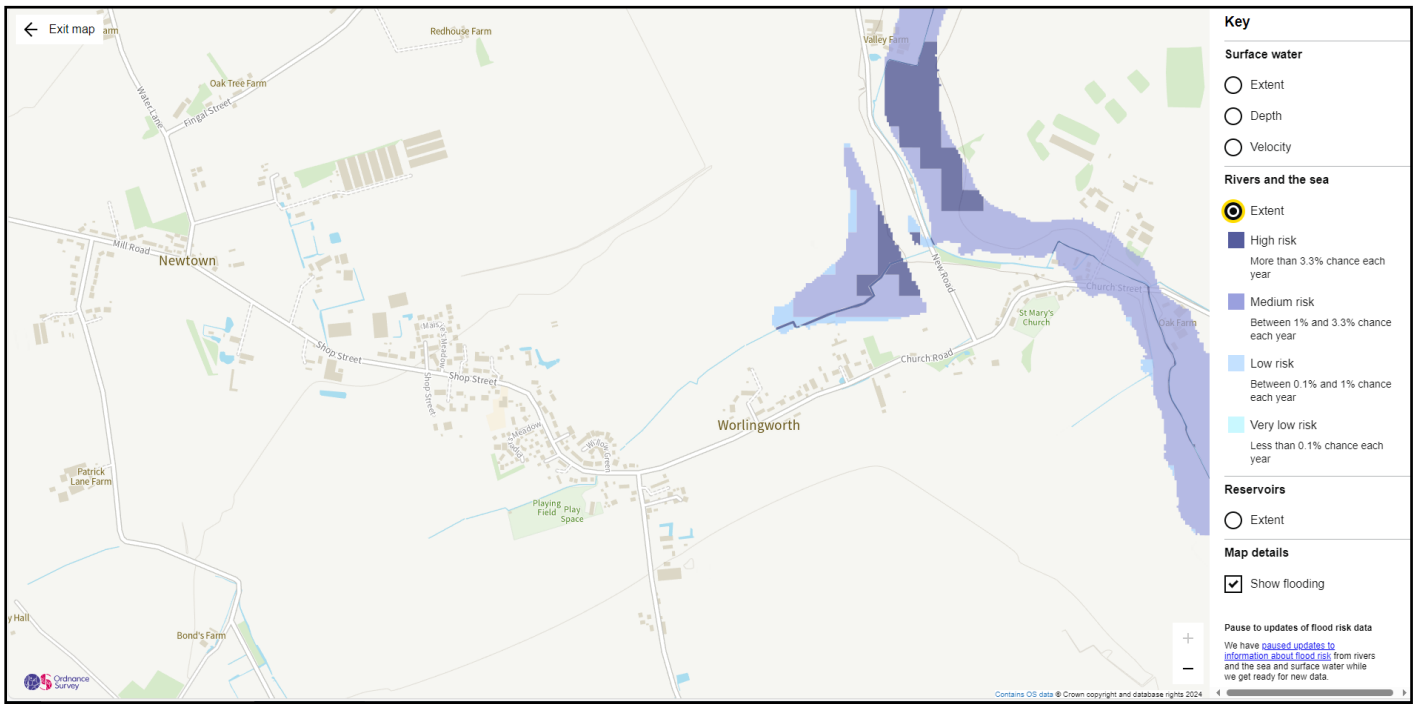

Figure 5 - Predicted flood risk from rivers

5. Catchment characteristics

Worlingworth is in the upper reaches of a catchment which drains towards Chickering Beck to the north, eventually making its way to the river Waveney. There is a small watercourse flowing west to east through the village which joins the watercourse to the east of the village and then flows north. the land surrounding Worlingworth is predominantly flat or has a gradual gradient, sloping towards the watercourses. Characteristic of shallow topography, there are localised areas prone to 'ponding'.

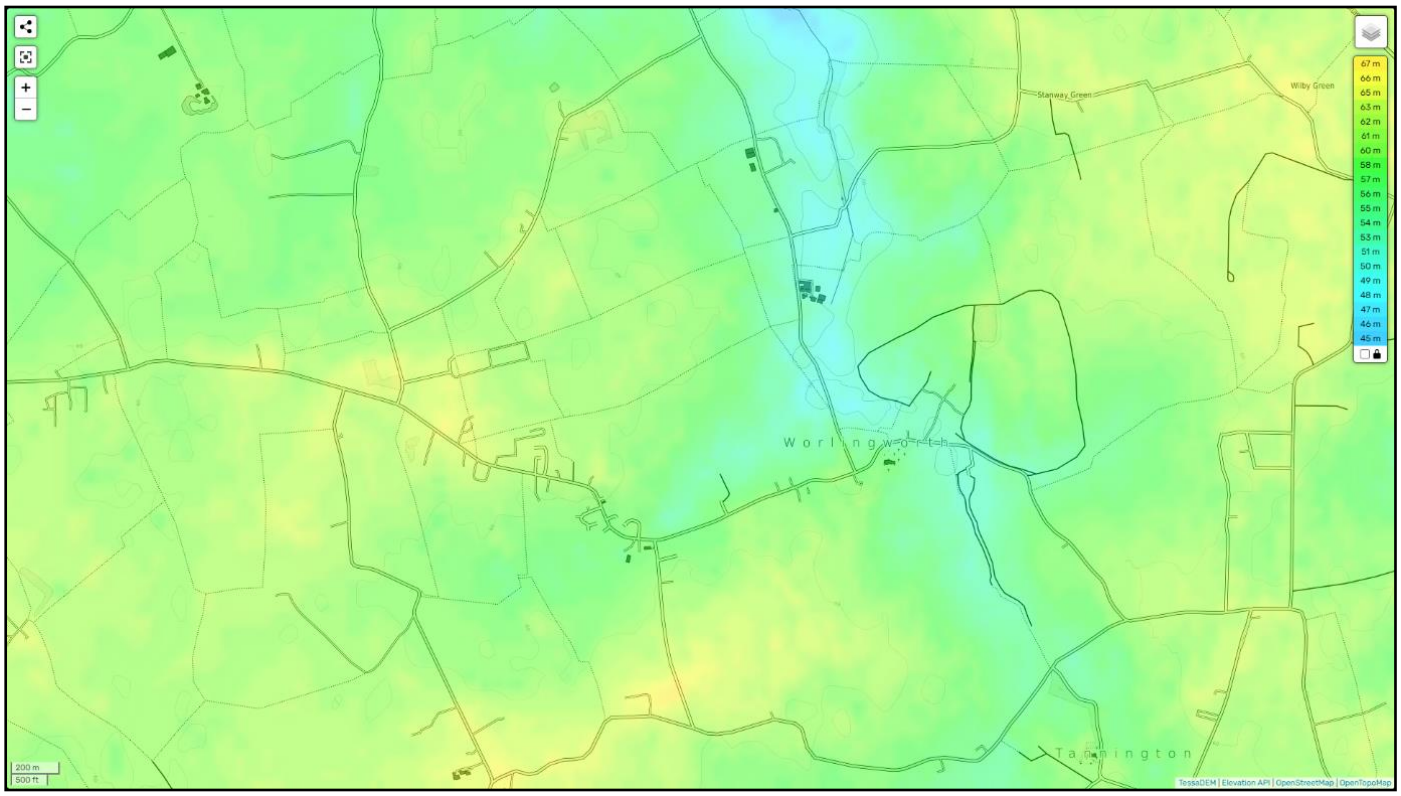

Figure 6 - LIDAR data of the elevation of the catchment area close up

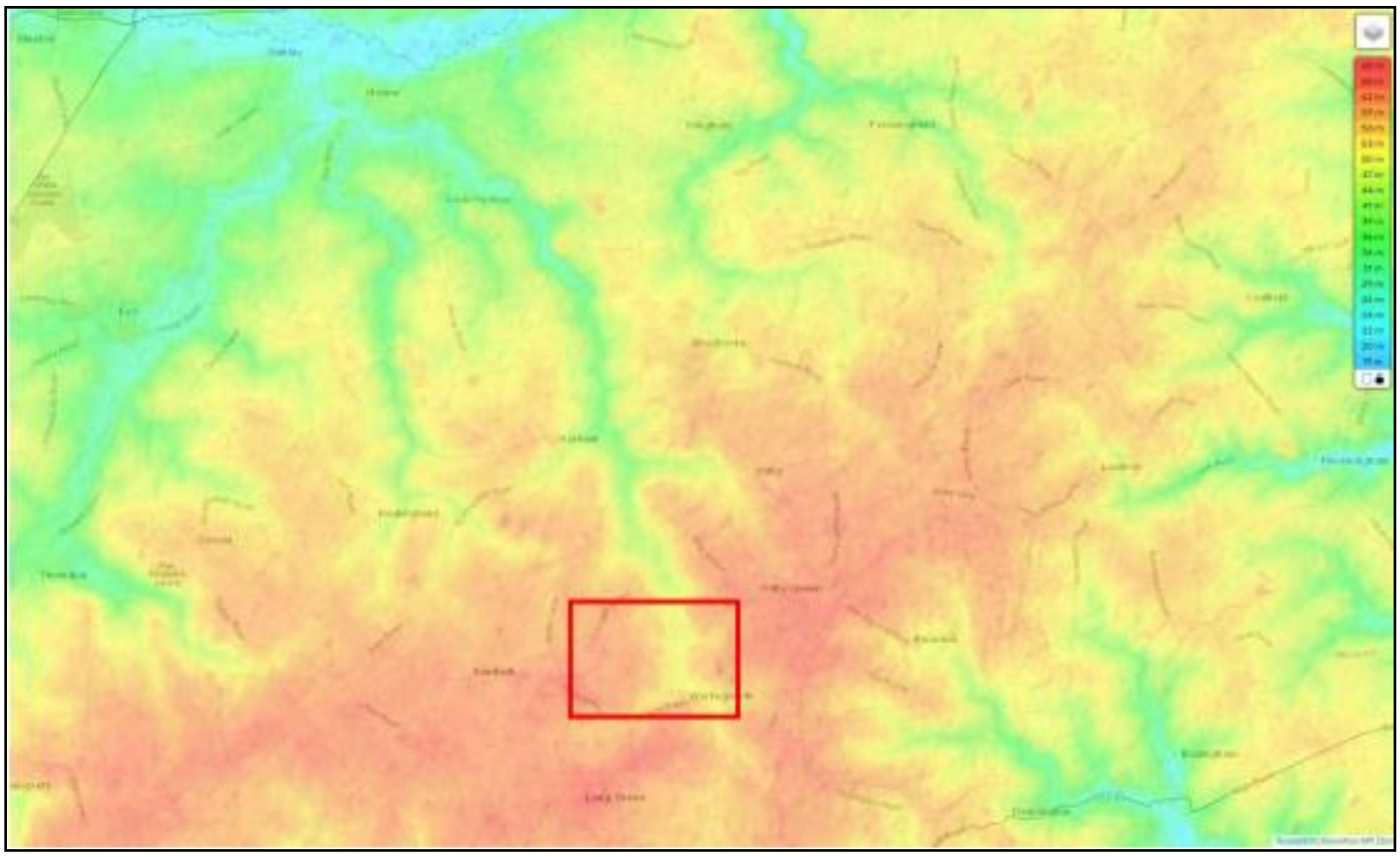

Figure 7 - LIDAR data of the elevation of the catchment area zoomed out

Figure 8 - Elevation data of the catchment area

The soils in Worlingworth are clayey and exhibit low permeability with impeded drainage. During rainfall, this means that infiltration is more limited and surface water run-off is more extensive. In saturated conditions, the ground is unable to absorb more water resulting in a high volume of surface water runoff.

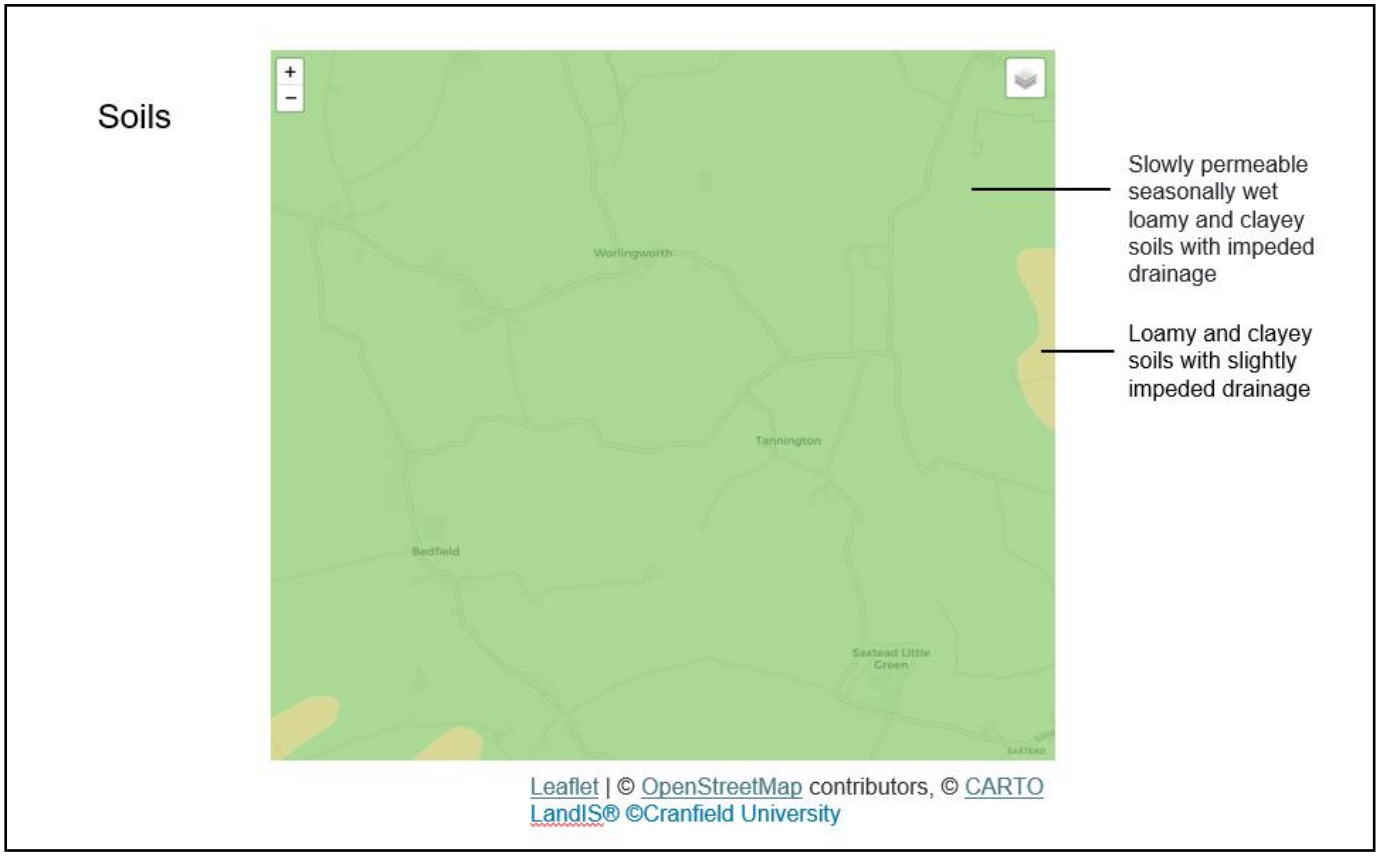

Figure 9 - Soils map of the catchment area

The superficial geology surrounding Worlingworth shows that much of the area is made up of 'Lowestoft Formation – Diamicton' which is described by the British geological survey as a diverse mixture of clay, sand, gravel, and boulders varying widely in size and shape. This is sometimes known as boulder clay. This generally has a low permeability meaning water will tend to flow off it before it can infiltrate, which reflects the reports collected during Storm Babet.

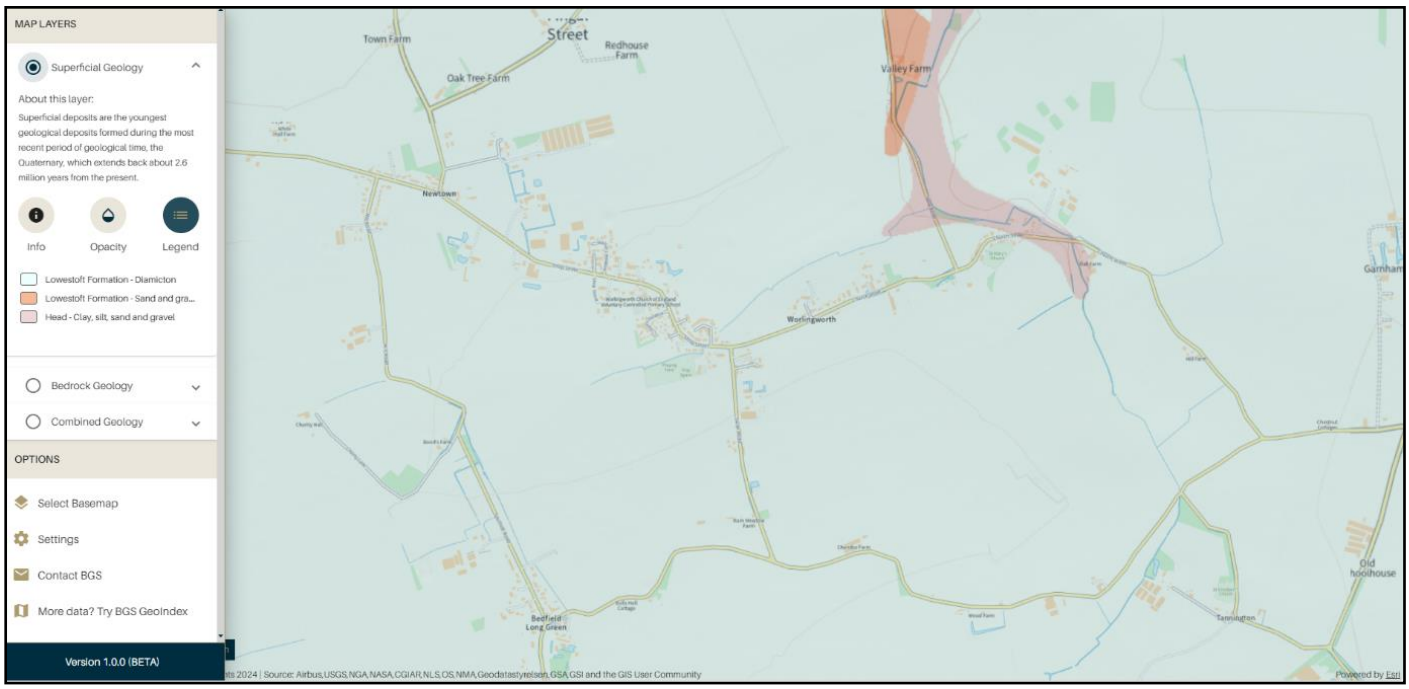

Figure 10 - Superficial geology in the catchment area

The bedrock geology in the area is described as predominantly sand and chalk, both of which are known to have good permeability. However, this can be restricted if water is unable to infiltrate the soil layers during saturated conditions. Due to the prolonged rainfall prior to Storm Babet, ground conditions were heavily saturated, and it is unlikely water was able to permeate the upper layers, resulting in poor infiltration and consequently overland run off was experienced.

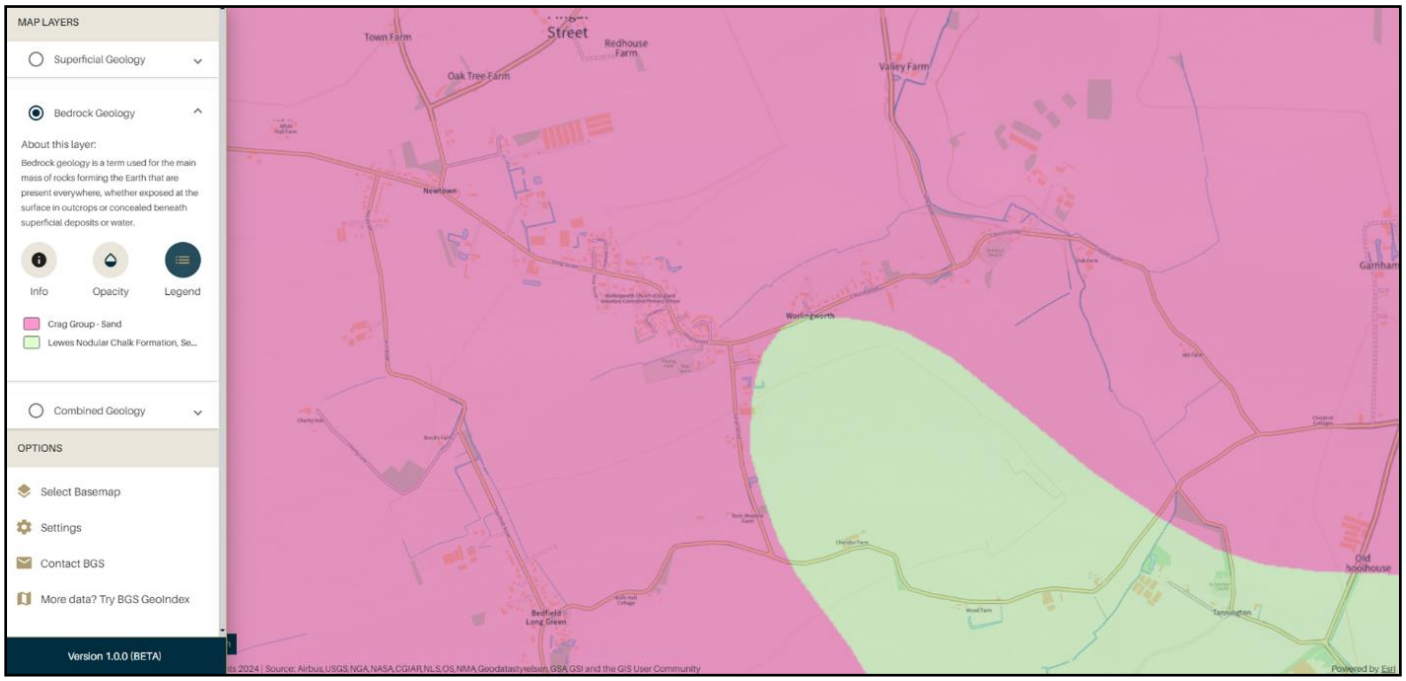

Figure 11 - Bedrock geology of the catchment area

Flooding Source(s), Pathway(s) & Receptor(s)

The impermeable nature of the surrounding soils and geology and predicted flow paths through the catchment make Worlingworth susceptible to flooding events in extreme rainfall. Storm Babet was an extreme event which came at a time when Suffolk had experienced a significant amount of rainfall in the preceding weeks.

Due to the location of Worlingworth and the lack of a designated main river within the village, there is limited rain gauge data within close proximity. However, data from surrounding Environment Agency Rain Gauges indicates that a significant volume of rain was experienced during Storm Babet. A nearby Environment Agency rain gauge in Saxmundham (approx. 10 miles east of Worlingworth) recorded 44mm of rainfall in a 12-hour period, where the average rainfall is 60mm for the entire month of October according to Met Office sources. (Met Office, 2020). Stradbroke gauge recorded 50.15mm in 18 hours, with a critical 4-hour period receiving over 50% of the rainfall at 26.74mm. A similar scenario was observed in Earl Soham, where the Rain Gauge recorded 68.49mm in 21 hours, with 50% of the rainfall (35.34mm) falling within a critical 3-hour period. The data recorded coincides with intensity of rainfall experienced, the speed of onset and the extent of flooding within the village.

The description of the flooding events outlined below has been prepared using reports submitted to Suffolk County Council via the online Highways Reporting Tool and information gathered by Risk Management Authorities and the Community.

A more detailed description of the key regions affected can be found below.

1. **West – Newtown & Mill Road**

A small number of properties suffered from internal flooding in the western part of the catchment with Newtown being the most affected area. Reports from Mill Lane have also been received, although little is known about the severity or impact in this area.

Reports from Newtown suggest that there are several issues, many of which relate to maintenance of watercourses, ponds and other water management features. Due to the flat nature of the ground in this area, it is particularly important that water management features are well maintained to allow for water to flow away in a timely manner or to be held safely in attenuation features such as ponds or wetlands, and again these will need to be well maintained to ensure a sufficient capacity. Many of the reports received and conversations with the residents suggested that debris and fallen trees in the channels of watercourses contributed to blockages, causing water to backup and overtop the features. This excess water then flowed to the lowest points, which in this location were often houses.

There are several ponds in the proximity of Newtown and some reports suggest that a lack of maintenance of these features has reduced their holding capacity through siltation and sedimentation, which may have exacerbated the severity of the event. However, due to the saturated conditions of the preceding months and severity of the rainfall event, it is likely that these features would have exceeded capacity anyway, although any increase in their capacity would have helped even if only in a small way.

There are several watercourses in the area which border the highway, properties and fields which are present to provide a route for water flow. These channels were reported to have been blocked or poorly maintained for some time which may have prevented effective water egress adding to flood water and worsening the event.

There is a large farming development just to the east of the houses affected and this has recently undertaken some works to strengthen the access road to and from the farm. As a result, a large area of non-permeable concrete was laid which could have affected speed of water runoff and prevented small amounts of infiltration taking place. However, as already mentioned, saturated conditions and poor permeability of soils is likely to have prevented this anyway, therefore this new impermeable surface is not likely to have had a significant impact.

Highways drainage records show a gully on the junction with Water Lane and Newtown, (an unclassified road leading to the nearby farm), which was ineffective and slow draining upon the last two cyclical inspections. This gully could have caused the draining of the water in the area to slow down, although, as it is some distance from the properties affected, it is unlikely to have been a significant factor in the flooding experienced.

Several residential houses were affected by internal flooding causing damage to furniture, flooring and personal affects. Significant overland surface water flows caused damage and debris to surrounding hedgerows, gardens and highways.

Figure 12 - Flow routes of water in west Worlingworth

In summary:

- Significant rainfall onto already saturated ground caused high levels of overland surface water flow, resulting in ponding of water in isolated low spots.
- Overwhelmed water management features, such as ponds, watercourses and wetlands caused and added to surface water flows.
- Poorly maintained water management features in the area may have exacerbated the issue.

LLFA Recommended Action(s):

- Report issues to relevant RMA or landowner/parish where known blockages or issues have occurred for relevant RMA/landowner to carry out remedial works where required.
- Highway authority to resolve slow draining gully asset on the junction with Water Lane and Newtown.
- Increase maintenance frequency of water management features in the area.
- Residents to install Property Flood Resilience (PFR) via grant funded scheme.

2. Central - Church Road, Shop Street, Old Stores Close, Willow Tree Yard & Willow Green

Central Worlingworth was the most severely affected with at least 23 properties known to be internally flooded. There is a history of flooding in the area as a large watercourse runs in from the west where it is significantly constricted into a piped system near the community centre and this point is one of the lowest in the village meaning water flows from all directions converge here.

While there is significant drainage infrastructure in the area, with piped watercourses, highways drainage assets and Anglian Water foul systems, these have historically been overwhelmed during heavy rainfall events. The Anglian Water foul sewerage system is only designed for toilet and sink wastewater. Its capacity is measured over a dry 48-hour period (as stipulated by OFWAT), and this methodology shows capacity in the system. However, during large scale rainfall events it is evident the foul system becomes overwhelmed with surface water causing flooding to the road and surrounding areas. Investigation work being undertaken by Anglian Water indicates the likely sources of surface water into the foul sewer could be from unregulated private connections from roof downpipes (which should be directed to soakaways) and/or infiltration of groundwater into unsealed, underground sewer pipes.

In addition, highways drainage assets are usually designed using parameters stipulated in the design manual for roads and bridges which is dependent on several factors, and much of Suffolk's highways drainage network is historic meaning it may not have been designed to modern parameters or with climate change taken into consideration. Reports from the event suggested drainage pipes at capacity were causing water to pour out of manhole covers in the road and verge and overtopped watercourses were spilling into properties and onto the highway.

During Storm Babet, flooding within Shop Street was experienced from both overwhelmed infrastructure and watercourses. To discuss firstly the drainage infrastructure, continuous rain over a prolonged period caused a rapid overflow of water from the drainage network. This flood water got deeper and began affecting homes which were set higher up on either side of Church Road and

Shop Street. The flood water cascaded down to Willow Green and affected the properties in the Close significantly, with flood water flowing in off the highway.

Flood water also came from overtopped watercourses within the area. Watercourses are located behind Willow Tree Yard; Willow Green and an additional watercourse runs roughly south to north down Swan Road and joins the west to east watercourse just on the northside of Church Road.

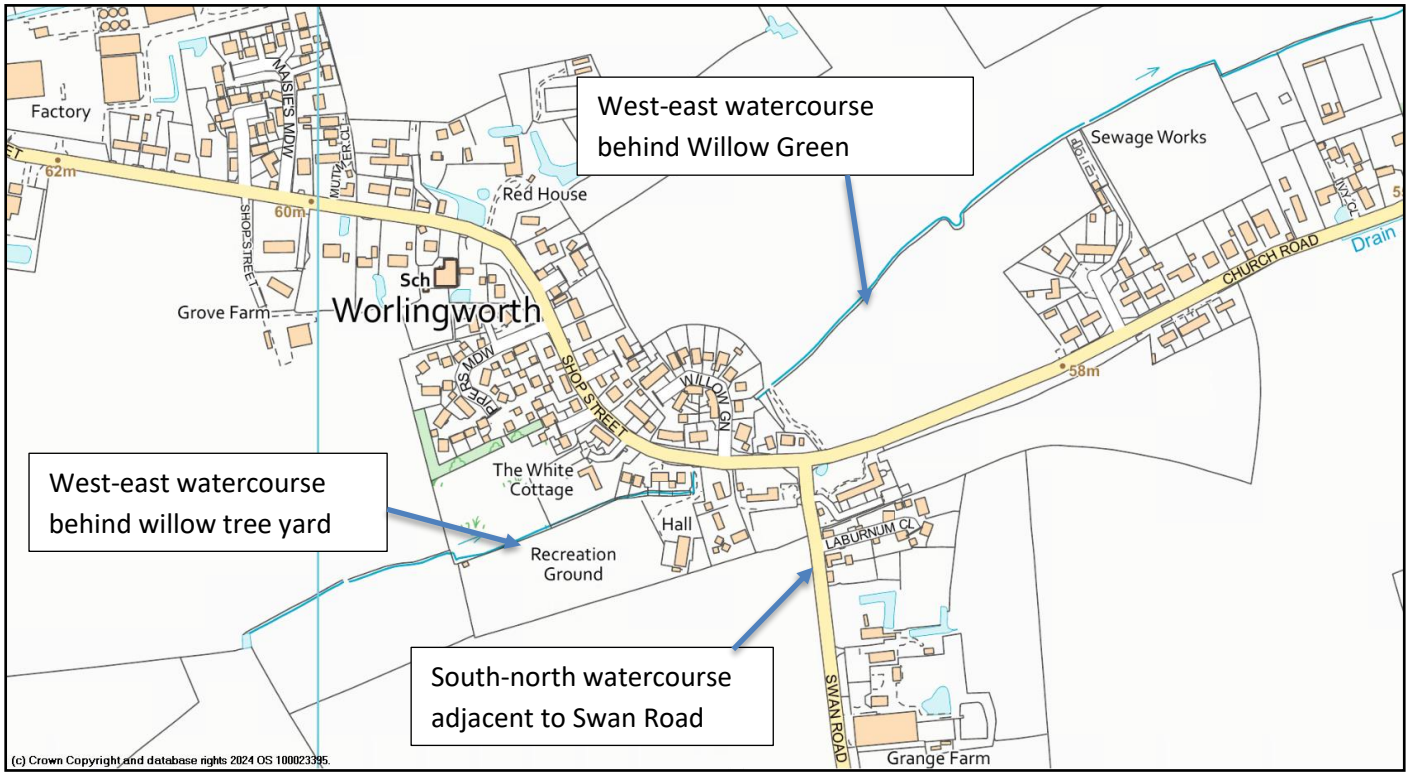

Figure 13 - Map of local watercourses

Several ordinary watercourses surround the housing developments on the south side of Shop Street, most of which convey water into the larger watercourse running between the recreation ground and Willow Tree Yard. This is where the first significant flooding event occurred on the day. The current level of maintenance of these smaller watercourses is unknown, although due to sheer volume of water during Babet, maintenance of these is unlikely to have been a significant issue.

Where the watercourse reaches the highway, it is then culverted and flows towards Willow Green. Reports from the day suggest this culvert was very quickly overwhelmed with volume of water, causing significant overtopping, which added to the flood water on the highway already coming up through the drainage infrastructure. The current outfall of this piped section of watercourse is not clear, although there are outfalls located north of Willow Green in the watercourse which appear to be likely. The watercourse then continues to the east although the gradient of the land is much shallower this way and as such the waterflow is slower.

A further watercourse joins with the west-east watercourse on the north side of Church Road and makes it way around the back of the buildings along Church Road and Willow Green (where it passes through some gardens) before heading east across the surrounding fields. Following a site visit in May of 2024, both watercourses in question appear to be well maintained, suggesting a lack

of maintenance is unlikely to have been an issue in the area and therefore it more likely that this event was a capacity issue at the pinch point in the centre of the village.

The topography of the land to the south of the village is steeper than the topography to the north, meaning the water flows fast into the centre of the village and slows down as it flows away to the north. This may have influenced the severity of the flooding as much of the water would have been unable to leave the area at the same rate at which it arrives from the south, causing pooling of water and more capacity issues to the existing drainage network.

There are several small ponds at low points in the centre of the village which connect with the watercourses in the area and while it appears these ponds are well maintained their capacity was overwhelmed during the event.

Water flowed primarily from the west and south as runoff from the surrounding fields and down the watercourses. As it reaches the centre of the village the before mentioned issues of capacity and change in topography result in the water pooling and causing significant flooding to residential homes and businesses. Internal flooding reached levels of 37cm, and external flooding was considerably higher. Internal flooding was severe enough in several properties that even six months after the event, residents are yet to return home.

Due to the natural topography in this area, improvements to the drainage systems are unlikely to make significant impact unless large scale capacity changes can be made. Due to the flatter outfall to the north and east of the area, large scale capacity increases are unlikely to be possible without engineered solutions such as pumping stations, therefore, measures to reduce the speed with which the water reaches this area would be a preferable option, or attenuation and infiltration features higher in the catchment may be suitable.

A new housing development near Grove Farm (west of the village centre) is in planning stages with a holding objection in place from Suffolk County Councils Lead Local Flood Authority on the grounds that the site has failed to show there is space for an above ground open SuDS system to effectively collect, convey, store and discharge water from the site at an agreed rate. If an agreement is met, this housing development may go some way to aiding in the slowing of the water flow from this area as SuDS features are specifically designed to maintain or reduce surface water runoff. However, current legislation only requires sites to not increase potential flood risk and not actively reduce it.

There are significant areas close to the watercourses in Worlingworth which are currently undeveloped or have other uses such as agriculture and playing fields. This opens possible options for attenuation of water in these area in large scale events drawing the flood water away from housing.

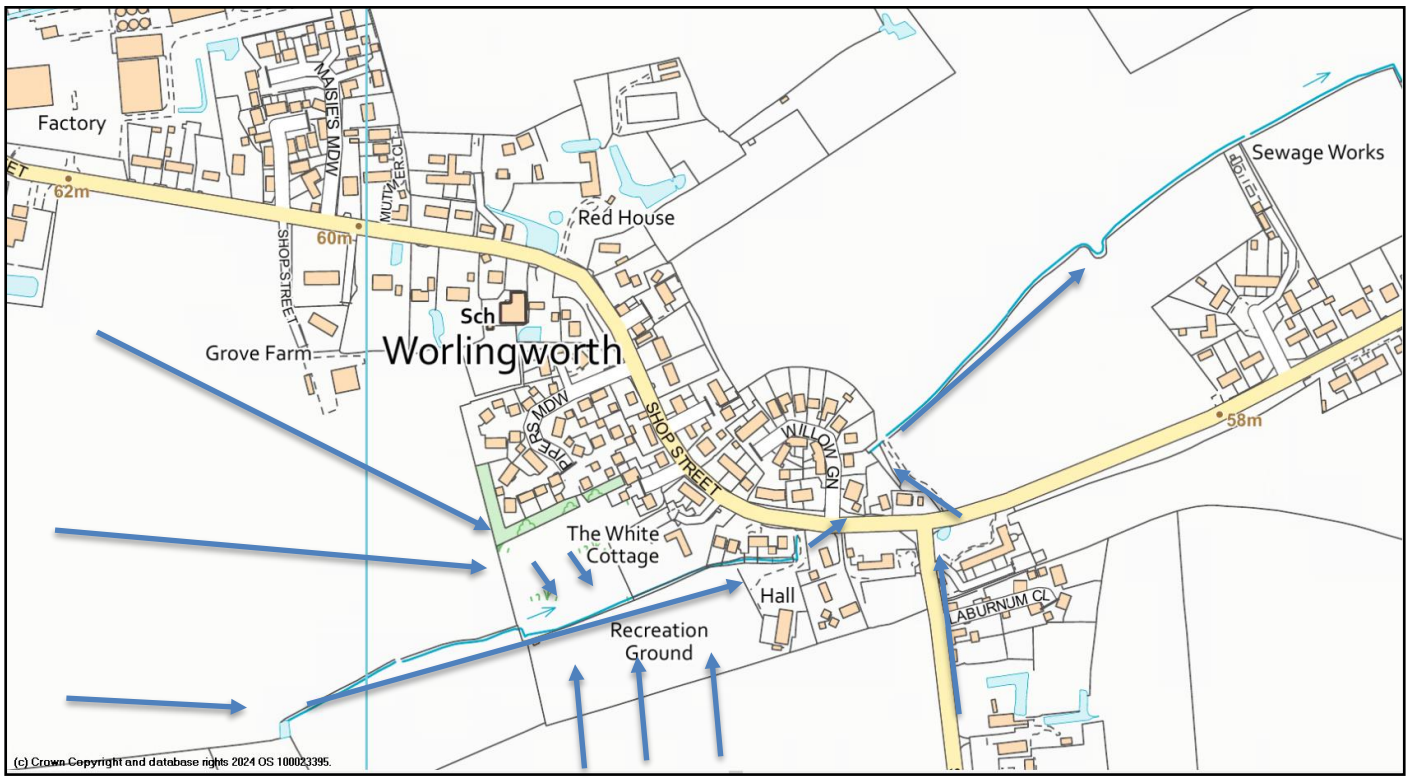

Figure 14 - Flow routes of water in central Worlingworth

In Summary:

- Significant rainfall and saturated ground caused high-level of overland flow towards the centre of the village, overwhelming water management features and spilling out at the pinch points near the community centre.
- Change in topography in the village centre causes water flow to slow down at this point adding to the overcapacity systems.
- Watercourses exceeded capacity and saw water flow out of bank, contributing to overland flows within the area.
- Highways and Anglian water assets were overwhelmed, and water was forced back up manhole covers adding to the flood water.

LLFA Recommended Action(s):

- Investigate possibility of natural flood management scheme in watercourses to the east and south of the village to try and slow the rate at which the water reaches the village centre.
- Investigate the possibility of attenuation/infiltration ‘overspill’ areas on the recreation ground (south of Shop Street) and agricultural land (east of Willow Green).
- Investigate the possibility of incentivising the retrofit of SuDS or rainwater harvesting systems for properties which currently drain roof water into the foul system. These can reduce surface water runoff and help to ensure the foul system is not overwhelmed during rainfall events.

- Anglian Water to investigate potential ground water intrusion into the foul sewer and plan works to reduce the occurrence of any related foul water flooding.
- Investigate the feasibility of increasing the capacity of existing drainage networks belonging to both highways and Anglian Water.
- Residents to install Property Flood Resilience (PFR) via grant funded scheme.

3. East – Church Street and Worlingworth Hall Farm

A small number of properties in the eastern end of Worlingworth were flooded internally and several properties experienced flooding to gardens and outbuildings. The issues in the area as described by the residents are mostly due to watercourses and there is significant uncertainty as to ownership, maintenance responsibility and historical watercourse routes.

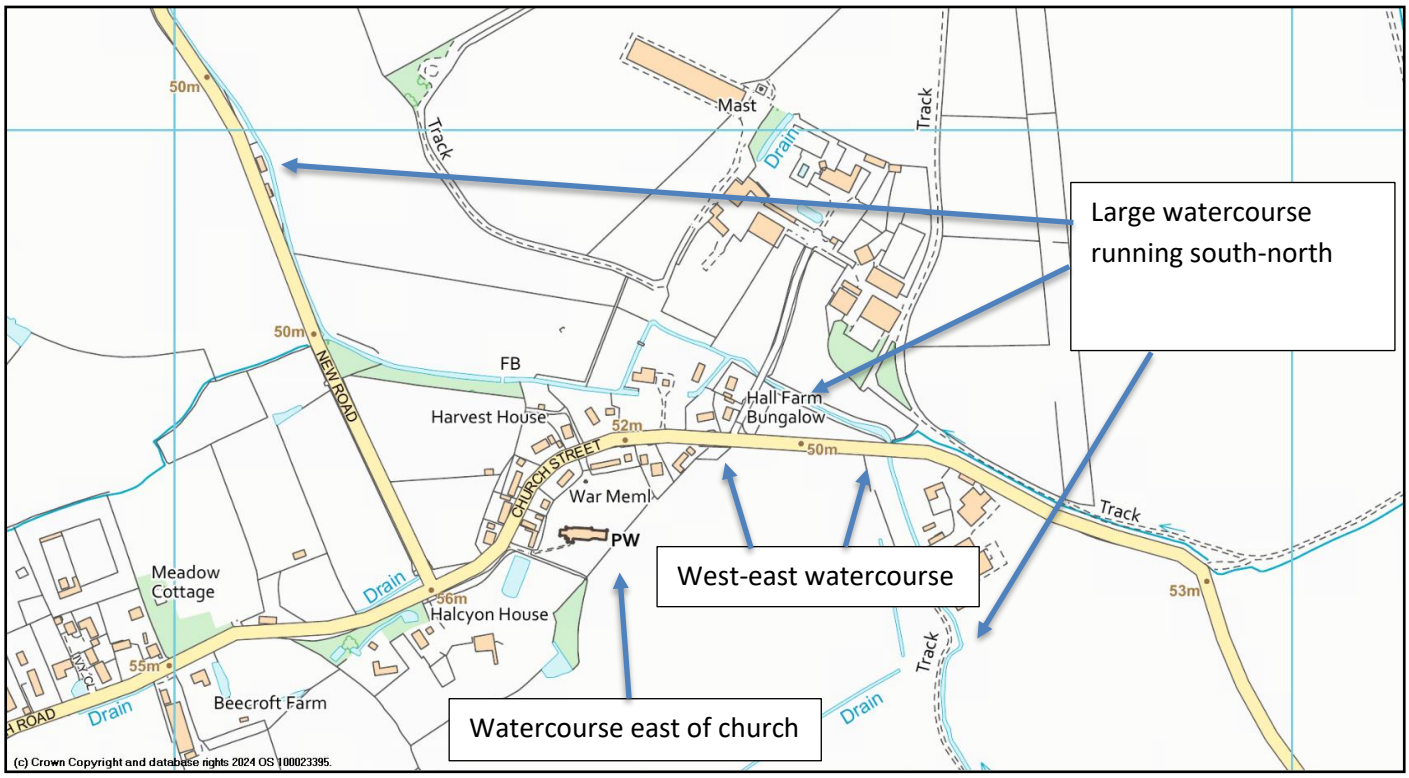

Figure 15 - Map of watercourses in east Worlingworth

According to residents there is a watercourse which runs south to north along the eastern edge of the church grounds. This comes to an abrupt stop as it meets the properties north of the church and there is no visible sign of a piped continuation of the watercourse. Reports from the event suggested that as surface water runoff from the surrounding fields to the south and east flowed down this feature, it pooled at the northern end and eventually overtopped, and water flowed south through the gardens and outbuildings of the surrounding properties. Once it reached the highway it pooled at the lowest point and flowed into properties off the highway. There are several highway drainage assets in the area all of which were recorded as working on the inspection prior to the event (September 2022), these were again inspected in December of 2023 and said to be working, it is therefore likely that the drainage system was overwhelmed due to significant rainfall rather than a localised blockage being an issue.

There is a further watercourse which appears to run west to east along the south side of Church Road. This feature runs into a culvert near to the Anglian Water pumping station and runs the length of the adjacent field and outfalls into the river to the east. An onsite inspection showed that a further culvert in the north bank of the watercourse runs through a pipe under the road and into the front gardens of houses on the north of the road. This culvert outfalls to the watercourse which runs behind the properties north of the road.

The watercourse was quickly overwhelmed due to the volume of water and consequently highways grips in the area were unable to discharge effectively into this watercourse. Additionally, water overtopped the banks of the watercourse and added to the water already present on the road. At this stage it is unclear if this is a capacity issue of the piped section or if there is a localised blockage. However, as the culvert size is approximately 300mm diameter in a large watercourse, it is likely this was a capacity issue. Reports suggest the culvert has been in place for a long time and therefore is unlikely to have been subject to land drainage consent legislation.

Properties on the north side of Church Street were affected predominantly from water flowing off the highway due to the overland surface water flow and overtopped watercourses as described above. However, further to the north, the watercourses in the area provide a natural boundary between properties. Reports from residents suggest that this watercourse could be blocked by overgrowing trees which could have caused a backup of water flow resulting in the overtopping of the banks of the watercourse due to prevention of effective water egress.

Additionally, as you travel further north along the watercourse, it borders ‘New Road’ on the east side and residents have suggested that a newly formed culvert along this section of watercourse has caused water to back up more frequently which may have had some impact on the day by preventing water egress at a suitable rate. As the new culvert described above is some distance to the north of the properties, it is difficult to say if it is affecting the flood risk in the area, however the restriction of a watercourse here would have been unlikely to receive land drainage consent due to the high risk of flooding. SCC LLFA records show no Land Drainage Consent has been applied for in this area.

Historic maps of the location suggest several water management features such as large ponds and several smaller watercourses were present to the north near Worlingworth Hall which would have helped with retaining water flows from this area and providing much needed storage space for water during heavy events. It is unclear from modern mapping if these features are still present or have been lost over time. If they are no longer present, reinstating some of these would aid in future events.

Residential properties were affected by internal flooding to significant depths with some residents having to move out of their properties for several months. Other properties were affected by water flowing across gardens and outbuildings but not affecting the property internally.

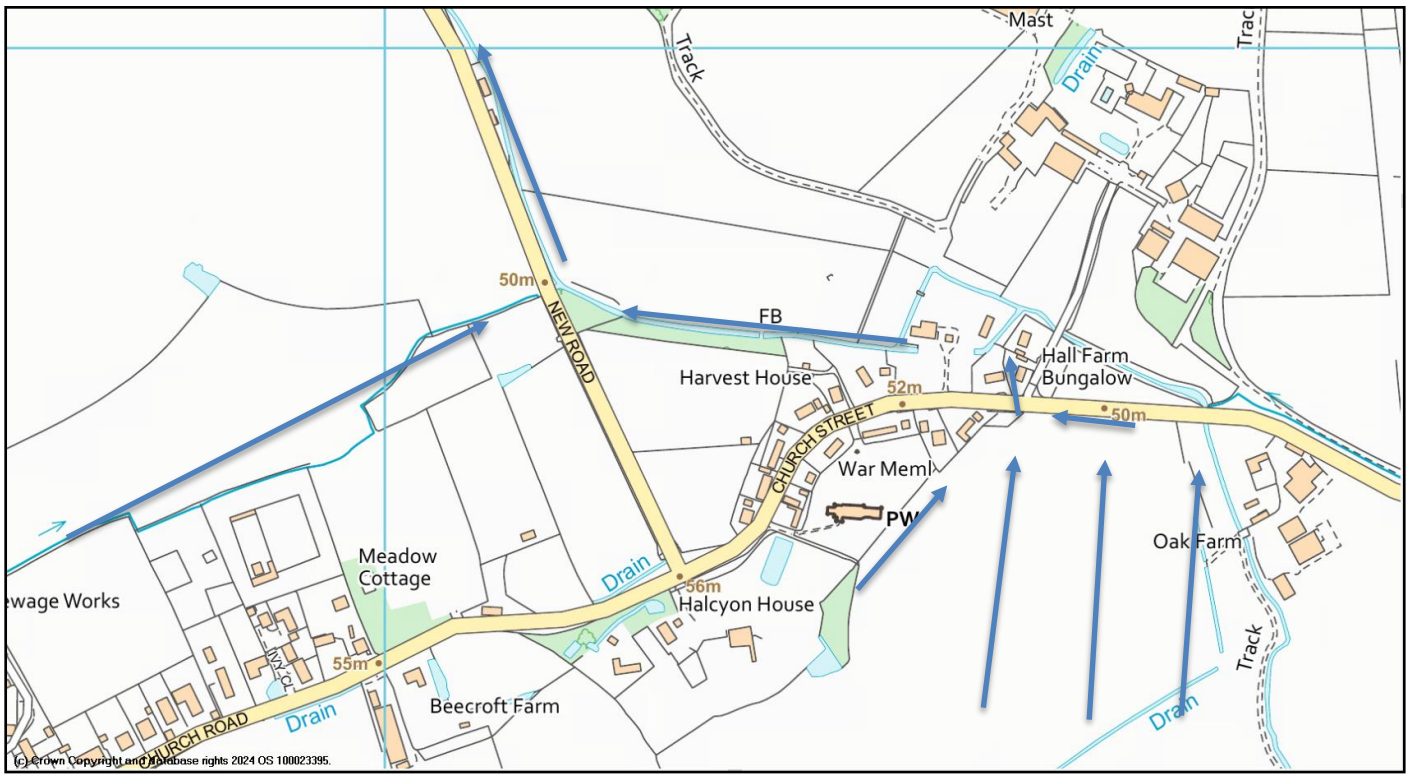

Figure 16 - Flow routes of water in east Worlingworth

In summary:

- Significant rainfall and overland flows caused watercourses to overtop and localised low spots to quickly fill with water.
- Watercourses and water management features in the area may have been lost or incorrectly maintained over time resulting in a loss of capacity in the channels or ineffective flow paths for water to egress.
- Highways drainage assets were overwhelmed most likely due to sheer volume of water.

LLFA Recommended Action(s):

- Landowners and riparian owners to investigate their parts of the watercourse network to ensure it is maintained in accordance with riparian responsibilities.
- Landowner on the south side of Church Road to investigate possibility of reinstating open channel watercourse where current piped section exists between the river and the AW pumping station.
- Landowners to the north to investigate historic water management features and confirm if they are lost and if so, to see if there are areas of land where they might be able to reinstate to increase capacity.
- LLFA to investigate what action should be taken about the new culvert adjacent to New Road.
- Possible NFM feature in the space south of Church Street to reduce surface water runoff could be considered in this area.
- Residents to install Property Flood Resilience (PFR) via grant funded scheme.

Photo(s) of Flooding

Image taken during the event from Eastern Worlingworth

Image taken during the event from Eastern Worlingworth

Image taken during the event from Eastern Worlingworth

Image taken during event from central Worlingworth

Image taken during the event in central Worlingworth

Post event damage to property

Image of the Sewerage network being overwhelmed by surface water (not taken during Babet)

Risk Management Authorities, Non-Risk Management Authority and flood risk function(s)

Risk Management Authority	**Relevant Flood Risk Function(s)**
Suffolk County Council	Lead local Flood Authority (LLFA), Highways Authority & Asset Owner
Anglian Water	Asset Owner
Babergh & Mid Suffolk District Council	Local Planning Authority & Asset Owner
Non-Risk Management Authority	**Relevant Flood Risk Function(s)**
Private Landowners	Riparian Responsibilities of watercourses and land management
Private Homeowners	Improving flood resilience to property and some riparian responsibilities if adjacent to watercourses.
Parish Council	Manage flood risk at a community level, prepare and produce flood action plans and maintain watercourses where present on land they own.

Action(s) completed to date:

The following section acknowledges actions that RMA's and non-RMAs have implemented or are currently in progress since Storm Babet and prior to publishing of this report.

Action	**Risk Management Authority**	**Progress**
Community works to clear watercourses and ensure gullies are not blocked during heavy rainfall events	Paish council/community	Complete/Ongoing
Information and education of the community regarding riparian ownership duties	Parish Council	Complete/Ongoing
Continue to report observed issues with drainage in the village to the relevant authority	Parish Council/Community	Complete/Ongoing
Sealing of a select number of manholes in Shop Street.	Anglian Water	Complete
Sewer monitors installed to provide early warning of blockages in sewer system	Anglian Water	Complete
CCTV survey of foul network to identify possibly infiltration into the network.	Anglian Water	Ongoing – completion expected Autumn 2024.

LLFA Recommended Action(s):

The following section provides a range of flood mitigation measures that could be implemented to reduce the risk of flooding in Worlingworth. They have been derived from evidence collected during the investigation and included having been considered relevant and realistic to implement. The implementation of actions falls to the relevant responsible party. Progress on the action will be monitored by Suffolk County Council and updates published, but it should be acknowledged that the Council does not have powers to enforce the implementation of recommended actions.

Action	Responsible Party	Timescale for response	Latest Progress Update for Actions
Short Term Actions (e.g. standard maintenance activity and initial investigation of options that can be undertaken with limited need for forward planning)			
Establish or revise a community emergency plan that includes reference to flood events – liaison with Suffolk Resilience forum	Parish council	6-12 Months	
Maximise the take up of the £5k PFR Grant currently available to residents before the April 2025 deadline	SCC LLFA / Residents	Latest April 2025	
Remove or report observed blockages within ordinary watercourses	Riparian Owners	As required	Ongoing
Increase the maintenance of watercourse management across the town and report observed blockages to riparian owners or relevant RMA	Riparian Owners / Community	As required	Ongoing
Carryout repairs to existing highways drainage network to ensure proper functionality on the gully at the junction with Newtown	SCC Highways Authority	TBC	
Carry out investigation to ensure piped section of watercourse under highway (Shop Street) is not blocked and to confirm outfall location	SCC Highways Authority and SCC LLFA if appropriate	TBC	
Riparian owner of watercourse on the eastern edge of the church to carry out maintenance to see if there is a piped section to connect this to the larger watercourse to the north.	Riparian landowner, assisted by SCC LLFA if required	6-12 months	
Inform landowner of unconsented works on new road and make them aware of	SCC LLFA	6-12 months	

possible future actions, as per SCC LLFA procedures.			
Work with LPA and developer to ensure proposed new developments in the area do not increase flood risk	SCC LLFA/LPA and developers	Planning timeline	Ongoing
CCTV Survey of foul sewer and private laterals to identify private roof water connections to the network, if applicable.	Anglian Water	6 months	
Medium Term Actions (e.g. longer planning timescales and potential need to source funding but potential for greater impact)			
Seek funding to implement measures to reduce groundwater infiltration if CCTV Survey concludes work required.	Anglian Water	12 months	
Investigate the implementation of individual rainwater storage features i.e. retrofitted SuDS or slow-release water butts, to reduce surface water in the foul sewer network.	Private Residents / AWS / Community	12-24 months	
Investigate potential NFM projects and funding opportunities which aim to attenuate water and 'slow the flow' in the upper catchments e.g. reservoirs, storage ponds, wetland areas, leaky dams.	EA/SCC LLFA /Landowners Key identified areas for possible schemes are: • Land to the east of the playing field for possible attenuation area • Watercourse which runs East-West across land east of the village for possible leaky dams • Recreation ground for possible attenuation • Land north of Church Road East of Willow Green	12-24 months	

	for possible attenuation • Reinstate watercourses in Eastern Worlingworth South of Church Road adjacent to AW pumping station		
Investigate potential new/additional highway drainage assets to manage surface water flows	SCC Highways Authority	TBC	
Landowner to the south of Church Road to investigate the possibility of reinstating an open channel watercourse running between the AW pumping station and the watercourse to the East.	Landowner, assisted by SCC LLFA and other RMAs as required	TBC	
Long Term actions (significantly longer timescale and budget required with potentially greater positive impact)			
Installation of NFM features within upper catchments to attenuate and slow flood water if investigation works suggest it is viable.	SCC LLFA//landowners	TBC	
Improvements to existing sewage infrastructure and the implementation of flood resilience measures to reduce surface water ingress and foul flooding from sewer network if investigation works suggest it is viable.	AWS	TBC	
Improvements to highway drainage network to manage surface water flows if investigation works suggest it is viable.	SCC Highways Authority	TBC	

Approval

This report will be reviewed and updated every 6 months until actions are marked as complete.

Reviewer	Date of Review

Disclaimer

This report has been prepared and published as part of Suffolk County Council's responsibilities under Section 19 of 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 while all reasonable efforts have been made to gather and verify such information 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. Should there be additional information available to develop the report, please email to floodinvestigations@suffolk.gov.uk

The opinions, conclusions and recommendations in this Report are based on assumptions made by Suffolk 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.

Suffolk 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 Suffolk 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 Suffolk County Council highlighting flooding to properties at a street level. Property owners and prospective purchasers or occupiers of property are advised to seek and rely on their own surveys and reports regarding any specific risk to any identified area of land.