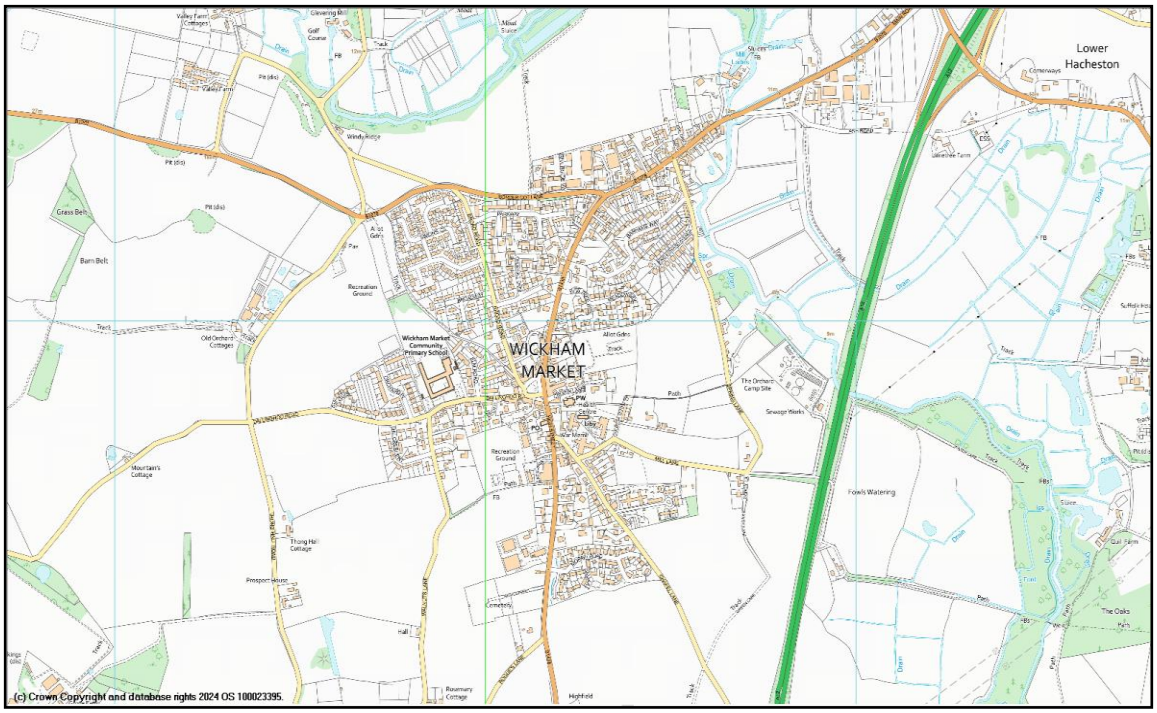
Section 19 Flood and Water Management Act 2010

Wickham Market Flood Investigation - Storm Babet October 2023



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Executive Summary

Storm Babet caused significant disruption to communities across Suffolk between 18th-21st October 2023. Wickham Market was one of the most severely impacted locations. Over 40 residential and commercial properties were internally flooded, and infrastructure and services were disrupted. 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.

Wickham Market is located in an area at significant risk of both fluvial (river) and pluvial (surface water) flooding and the nature of the surrounding topography and geology contributes to the susceptibility of the town to flooding. Areas of the town are low-lying, surrounded by a reasonably steep rural catchment. There are significant flow routes located predominantly to the east of the town but there are noticeable flow paths that travel across the urban centre towards the east. The local geology and soils are characterised as having low permeability and high run off, making a high number of properties in the town vulnerable to flooding due to intense rainfall events. Storm Babet delivered significant rainfall in the River Deben catchment, following an extended period of above average rainfall.

Impacts within Wickham Market were widespread and for the purposes of this report, the affected areas have been categorised into four 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. Environment Agency, District Council) 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 Wickham Market 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 with the overtopped River Deben 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 Wickham Market. 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 drainage infrastructure. For medium to longer term recommendations, there is emphasis of the investigation of potential improvements to drainage infrastructure (both authority and individual), hydraulic modelling to better understand flooding within the location 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 Met 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. The storm brought between 50 mm and 80 mm of rain to much of central and northern East Anglia, with some Suffolk weather stations recording the wettest October day on record.

The Environment Agency river level measuring stations indicated many 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 flooding of roads and properties. The river systems rose rapidly across whole catchments due to the existing conditions, which 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 extent to which the rainfall in the months preceding Storm Babet exceeded the average monthly rainfall for July to October in recent years in Suffolk.

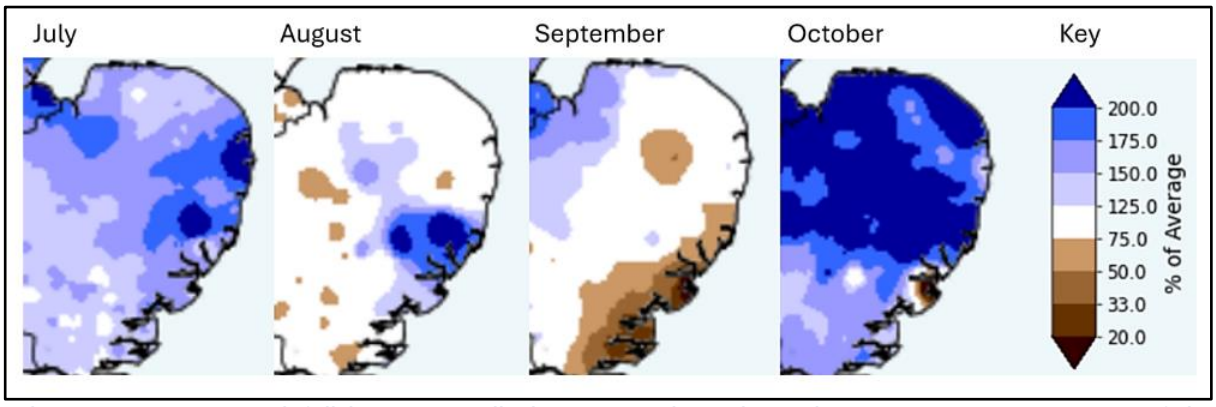

Figure 1 - Average rainfall in East Anglia between July and October 2023 as a percentage of the historical average monthly rainfall

The following report acknowledges that October 2023, and particularly Storm Babet, was an extreme event and will assess the likely causes 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 regular 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

Wickham Market is a large village in the river Deben valley, within East Suffolk. It is on the A12 trunk road 13 miles (21 km) north-east of the county town of Ipswich, 5 miles (8.0 km) north-east of Woodbridge.

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 Wickham Market 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.

Wickham Market was significantly impacted with over 40 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 the river Deben and other watercourses (fluvial) and overwhelmed sewerage and drainage systems. For the purpose of this report the term ‘flood water’ may be used to describe both fluvial and pluvial flooding.

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

1. North – Ashe Road, Deben Mills, High Street (North) and Spring Lane
2. East – Mill Lane
3. South – Morris Road and High Street (South)
4. West – Broad Road, Broadway, and Orchard Place

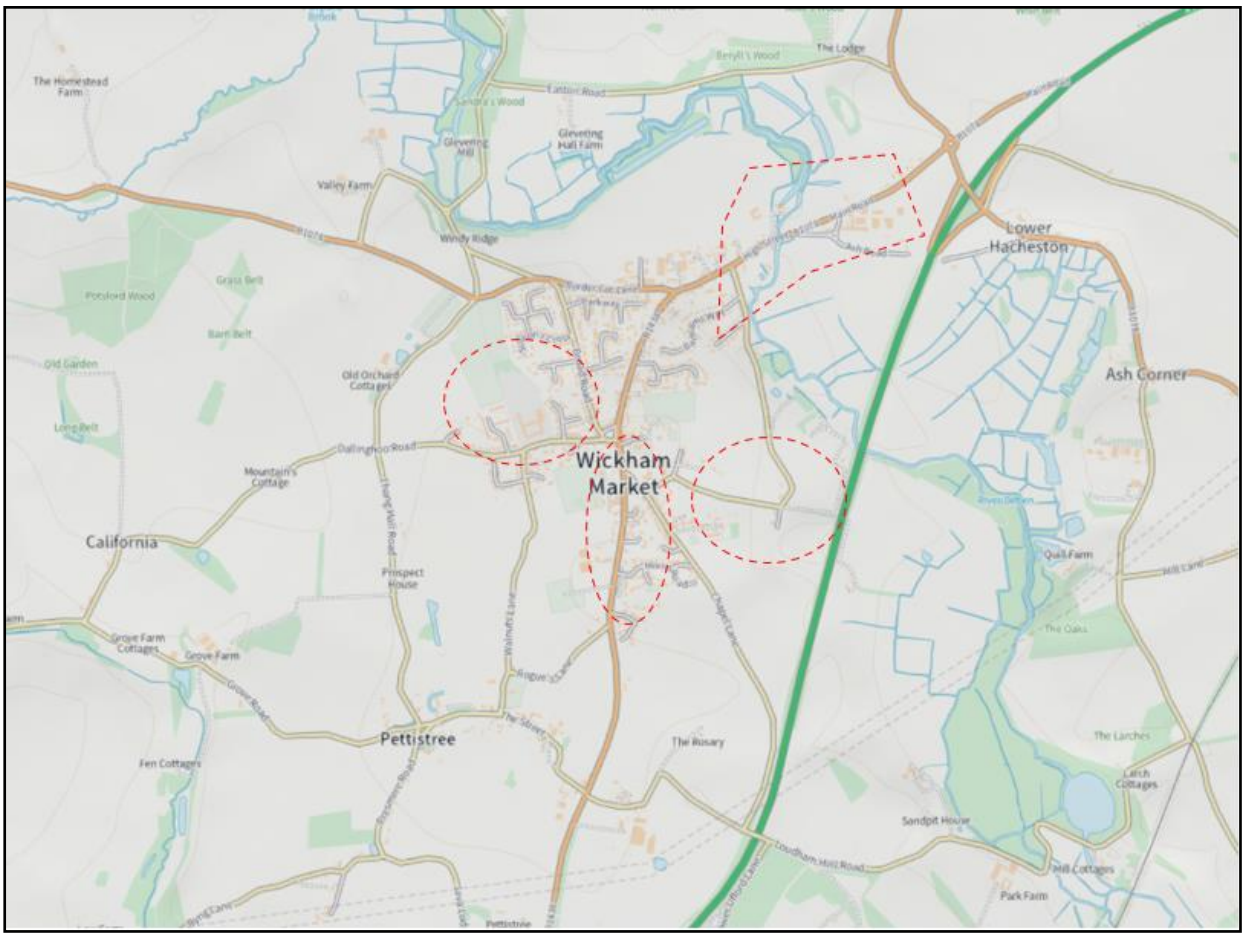

Figure 2 - Investigation map area

3. Records of any historical flooding

Wickham Market has been affected by flooding in the recent past with incidents being reported across the village over the last decade.

Broadly speaking, the historical events mirror the Storm Babet event, with similar areas being affected i.e. High Street, Spring Lane, Broad Road, Broadway, Orchard Place and Mill Lane. However, historic records have not previously included internal flooding reports with issues in the past being limited to highway and external flooding events.

4. Predicted Flood Risk

Wickham Market is identified as being at significant flood risk from more than one source of flooding, and this is demonstrated in the following mapping information. The town is at risk of both fluvial (from the Deben, designated Main River) and pluvial (surface water run-off from surround land and ditches) flooding. The main areas predicted to be at risk coincide with the locations affected during Storm Babet, i.e. High Street, Spring Lane, Broad Road, Broadway, Orchard Place and Mill Lane.

No significant risk is currently predicted for flood events from reservoirs or the sea in this location and information pertaining to groundwater in this area is not available.

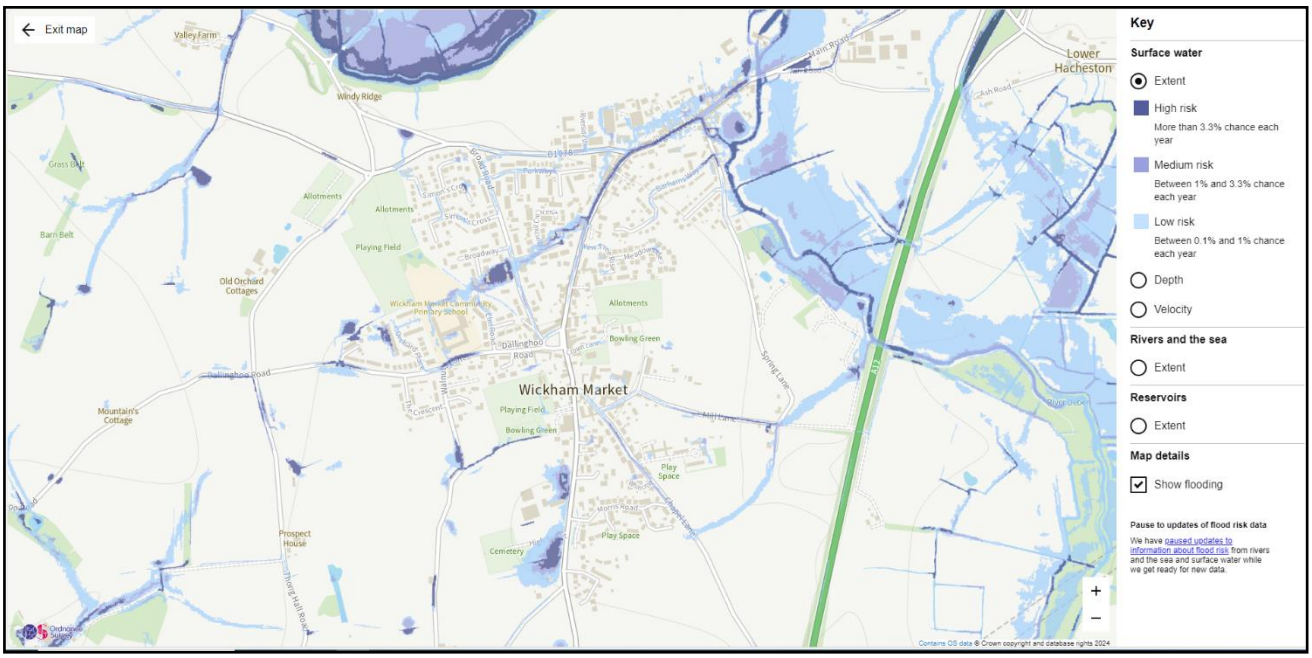

Figure 3 - Predicted pluvial (surface water) flood risk

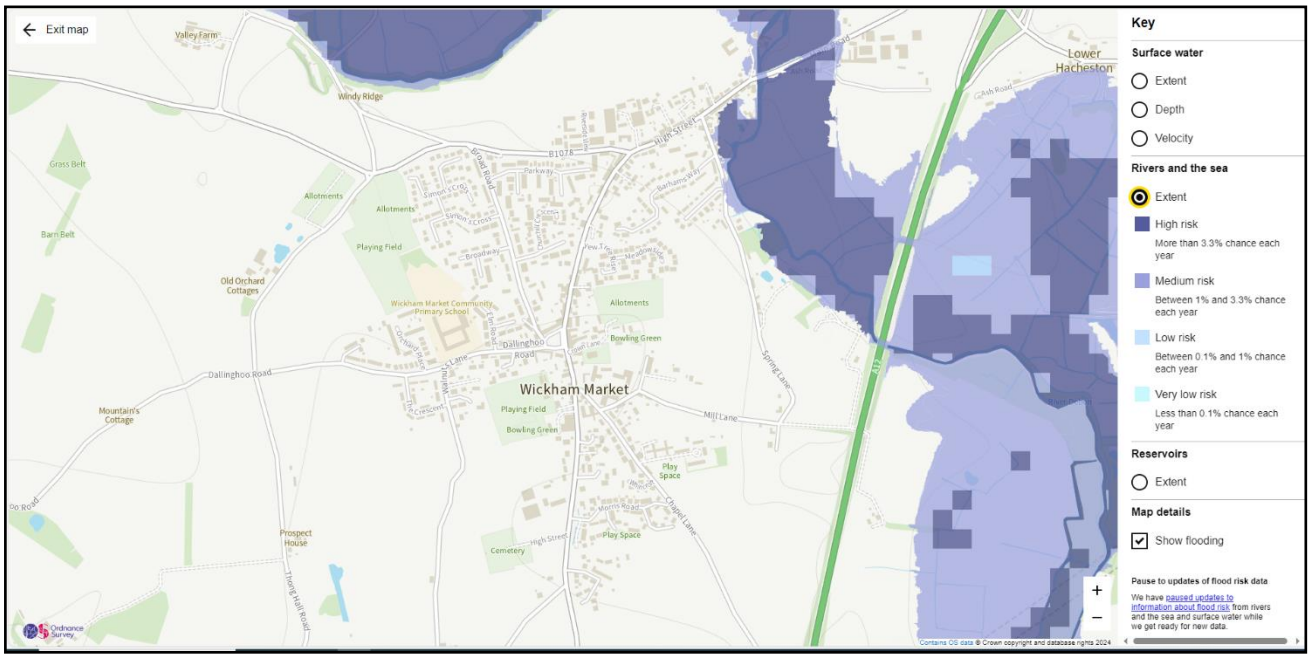

Figure 4 - Predicted fluvial flood risk

5. Catchment characteristics

Wickham Market is located in the Deben River valley, just to the south and west of the River Deben. It contains a main river flow path which runs approximately north to south along the eastern side of the village. There is a smaller surface water flow path which runs north south to the southwest of the village. Surface water falling onto the catchment drains towards one of the two flow paths shown using the arrows in the figure 5.

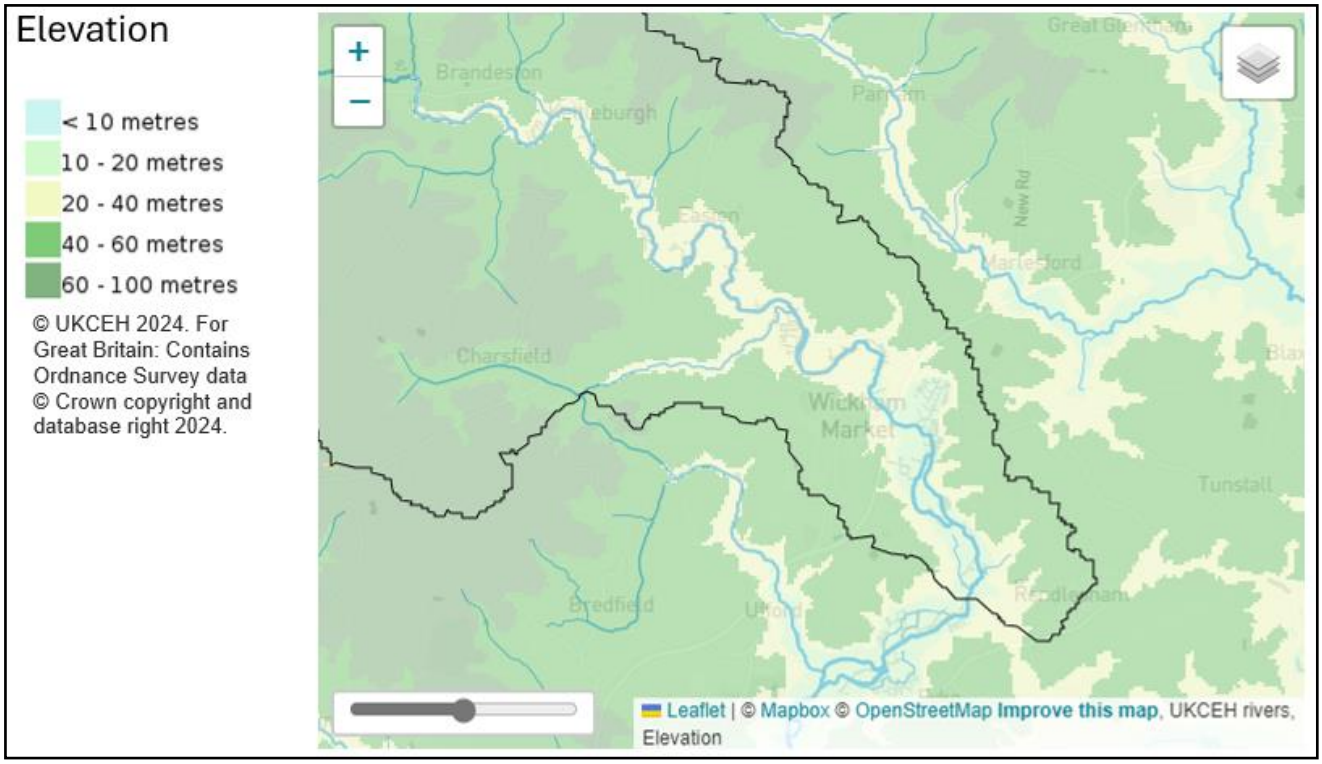

Figure 5 - Topography showing the catchment boundary surrounding Wickham Market

Areas of Wickham Market are low lying, with reasonably steep surrounding topography. A small proportion of the village in the northeast corner is low lying and noticeably shallower than central and western parts of the town (Figure 5). This area will be susceptible to overtopping from the River Deben compared to other locations. Other regions will be more susceptible to flooding from surface water runoff during heavy rainfall.

The Geology surrounding Wickham Market 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 soil 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.

The soils surrounding Wickham Market are diverse with the majority of the west of the catchment being made up of soils with clayey make up and an impeded drainage,

however through central and eastern Wickham there is a large portion of sandy soil which would allow for good infiltration in typical conditions. However, it is possible that saturated conditions in the ground leading up to the event could have prevented some of this infiltration.

The topography, geology and soils within the catchment make Wickham Market susceptible to extreme rainfall events, with high run off and limited permeability in much of the catchment. Saturated ground and high rainfall, like that of Storm Babet, will further emphasise the vulnerability of the town and localised flooding could be experienced.

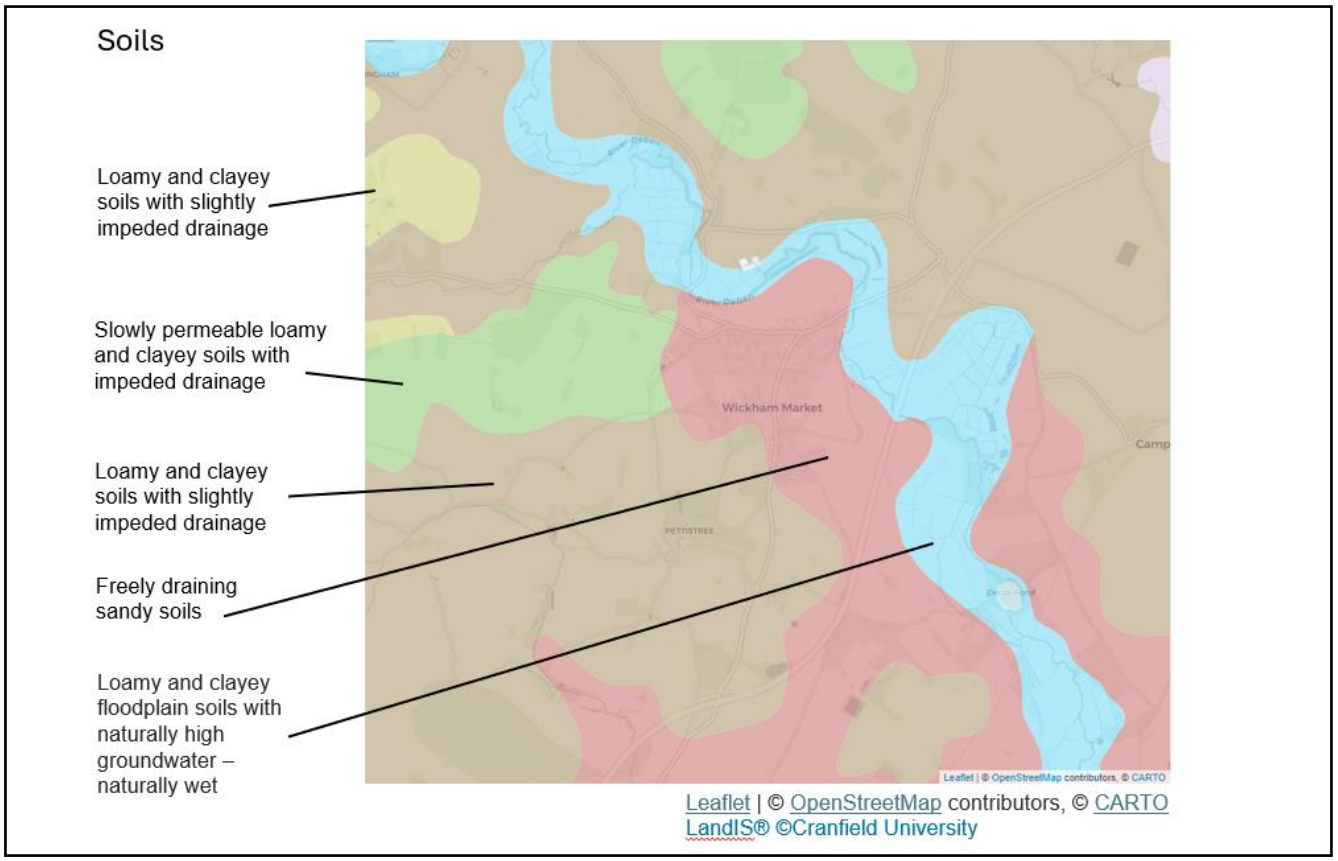

Figure 6 - Map of soils surrounding Wickham Market

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

Wickham Market is located in close proximity to the river Deben and has a significant size catchment area of surface water runoff from the west of the village. The significant rainfall experienced during Storm Babet affected many properties, both residential and commercial, and caused disruption to roads and infrastructure. In addition, the agriculture within the vicinity was impacted, resulting in damage to crops, dangerous situations for livestock and significant impact to pastureland.

The description of the flooding events described below has been prepared using reports submitted to Suffolk County Council via the online Highways Reporting Tool and information gathered by the Environment Agency. Some on-site images and measurements were recorded by Environment Agency Community Information Officers (EA CIO's) in the aftermath of Storm Babet.

Detailed descriptions of each investigation area can be found below.

1. **North – Ashe Road, Deben Mills, High Street (North) and Spring Lane**

The northeast corner of Wickham Market is situated in close proximity to the River Deben and therefore susceptible to flow paths that overtop the riverbank. On the 20th October, reports in the area suggested the overtopped river was a significant cause of the flooding within this location. In addition, heavy rainfall earlier in the morning was reported to have caused the highways drainage to become overwhelmed before the riverbank was breached. At least 48 Properties are known to have been affected in this area.

The Deben Mills and Rackham's estates are located directly on the river and were the areas first affected by the flood water. According to witnesses, once the river's banks were overtopped north of Deben Mills, the flood water spread through the Rackham estate and travelled southwest towards the back of properties on the north side of the High Street. This flow path around the northwest side of the Rackham's estate does not fall in line with currently predicted flood risk.

Additionally, overtopping of the river just north of the main road bridge caused a flow path across the access road to the Deben Mills heading west and south along the highway, affecting properties on both sides of the High Street. The highway flow path continued down the road towards Spring Lane and entered properties through the front doors, which was exacerbated by passing vehicles causing bow waves as they continued to pass through the flood water. On the north side of the High Street, reports suggested that the flood water was flowing down the highway during most of the morning of the 20th October and later in the afternoon a torrent of water came across the gardens to the rear of the properties causing internal flooding. This falls in line with other reports suggesting the surface water was flowing down the highway well in advance of the river overtopping.

Further overtopping of the river to the south of the High Street bridge caused flood water movement west towards properties on the south of the High Street and east of Spring Lane, consequently causing flooding to the front and rear of these properties.

Flood water which overtopped the eastern bank of the river, north of the mill, travelled south and west and affected properties on Ashe Road. Water flowed over the B1078, travelled down Ashe Road and into properties from the front.

Reports taken by EA CIO teams shortly after the event, suggest an additional water source was coming from surface water flowing off the fields from the northeast of the High Street. This flow path was less significant than the overtopped river flows but added to the flood water exacerbating the event. Additionally, a surface water flow path was observed by residents to have been coming from the fields to the south of King Edward Avenue and west of Spring Lane. This flow path was of a significant enough velocity that it caused erosion to the highway bank causing mud to slip onto the highway and create hazardous driving conditions. This flow added to the flood water on spring lane further intensifying the event.

Some concerns were raised by residents regarding the potential impact of the White Bridges Sluice located in the River Deben approximately 2km downstream of Wickham Market. Following discussions with the Environment Agency, it was confirmed that this sluice is a water level control structure (not a flood risk management asset) in a fixed position which is submerged in small flood events, therefore it is unlikely that this will have been a contributing factor. Subsequent visits to White Bridges Sluice by Environment Agency officers in May 2024 following heavy rainfall in the catchment saw no evidence of overtopping in the White Bridges Sluice area at the time that there was inundation of the floodplain in Wickham Market.

Further concerns were raised by residents that the Anglian Water Pumping Station for foul water to the north of High Street was not operating effectively. Following conversations with Anglian Water they have confirmed that both pumps located in this station were operating correctly throughout the event, despite the site being overwhelmed.

Flood water caused further internal flooding to properties on Ashe Road, High Street, Spring Lane and the Deben Mill and Rackham's estates. Internal flooding reached levels of 60cm, and external flooding was measured through wrack marks at 100cm. Reports suggest that the significant flow of water in the area caused damage to brickwork and removed mortar, causing walls to collapse. Livestock had to be rescued from the area by residents and homeowners were evacuated from some properties that were surrounded by flood water.

The map below shows the main flow routes of the flood water in this area. It is important to note that following a site visit from the EA after the event, a significant build-up of silt in the main channel of the river has been identified adjacent to the B1078 road bridge over the River Deben. Investigations between Suffolk Highways

and the Environment Agency are ongoing regarding the removal of the silt to increase the capacity of the river channel under the bridge.

Flood water from the overtopped river channel.

Flood water from the surrounding field runoff. (flow path to the south of the map was originating from the fields to the south).

Combined flood water.

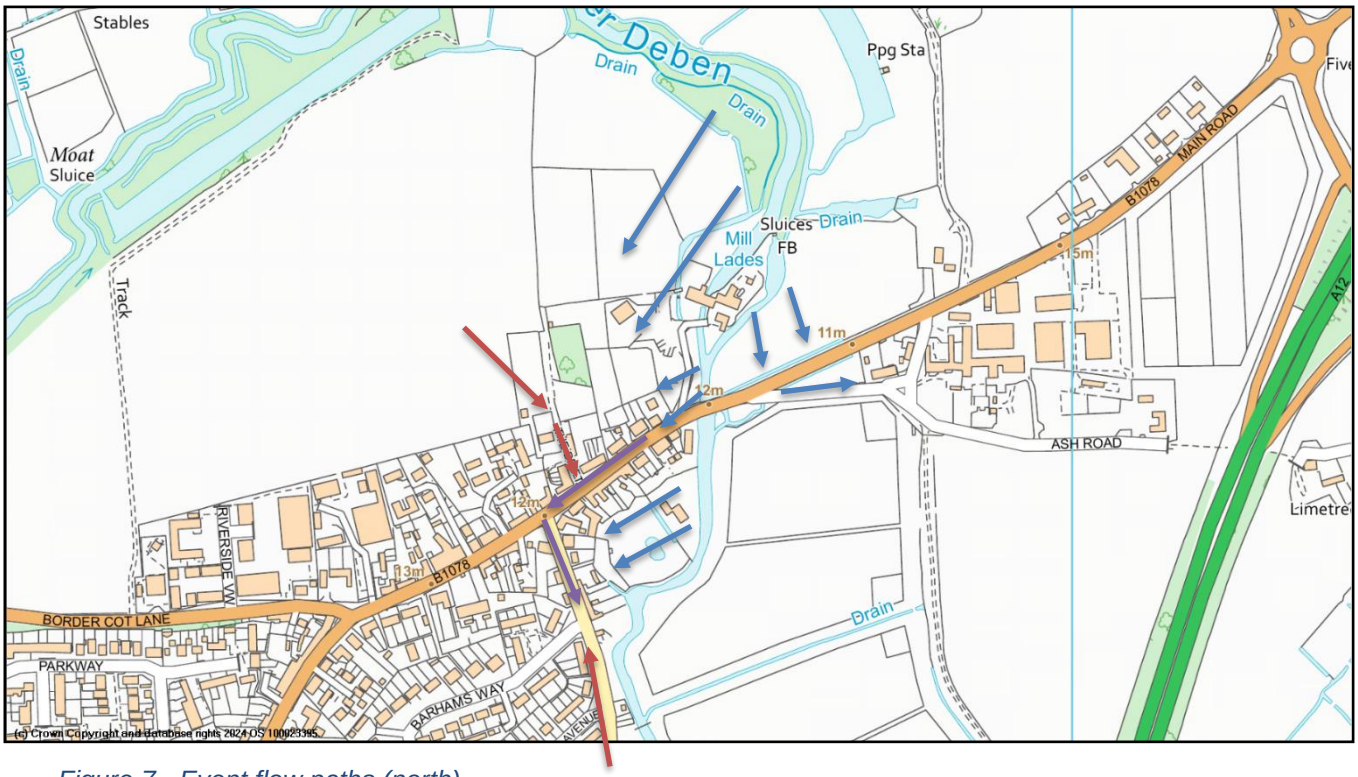

Figure 7 - Event flow paths (north)

In summary:

- Flood water from the Deben overtopping, flowed down High Street, Spring Lane and across Rackham's and Deben Mills estates. Some flows were not in line with currently predicted flood risk.
- Highway drainage gullies became overwhelmed due to significant rainfall and water from overtopped river.
- Anglian Water assets were overwhelmed due to significant water volumes entering the system predominantly from the overtopped river Deben.
- Significant silt build up in the river Deben to the north and south of the main road bridge may have reduced capacity in the channel.
- Surface water flow paths from the north and south exacerbated the severity of the event.
- Possible attenuation opportunity on the fields to the south.

LLFA Recommended Action(s):

- EA and SCC to investigate possibility of removing silt build up near main road bridge
- Investigate the possibility of Natural Flood Management (NFM) in the fields to the north-west and south-west to try and prevent these secondary flow paths from having such an impact.
- Anglian water to investigate the capacity of the pumping station in the area to ensure it is of adequate size.
- SCC highways to investigate the possibility of increasing the capacity of the drainage network in the area

2. East – Mill Lane

The eastern area of Wickham Market was the least affected by the flooding, however Mill Lane, which runs east-west and Chapel Lane which runs northwest-southeast are some of the lowest points in the area and as such can act as a flow path for surface water. Historically, Chapel Lane is regularly affected by flooding events from surface water, and this was cited as a cause for concern at the planning stage of the Wickham Gate development.

Evidence suggests that surface water runoff from surrounding fields was the main cause of the flooding in this area, which is in line with predicted flood risk mapping.

Concerns by residents have been raised that much of the flood water was coming from the nearby housing development. It is unclear from the reports if the issue is with the currently under construction 'Wickham Gate' development or with the development completed in 2016, but the reports reference an 'overflowing basin' which suggests it might have been the site currently under construction. Following discussions with the Local Planning Authority (LPA) and the housing development representatives, the site works by utilising three balancing ponds (which are designed to overtop into the next pond once full) and an infiltration basin which is designed to allow water to collect and slowly infiltrate into the soil overtime. At the time of the event, much of the site was either under construction or construction not started and as such little to no impermeable surfacing had been put down. Additionally, as some surface water management was constructed, even if features were not working to full capacity at this time, it is likely that some attenuation affects were in place. Without measured surface water runoff from the event, it is very difficult to suggest if the site increased or reduced the natural surface water which would have occurred irrespective of the development.

Since the event, the developer has completed the surface water attenuation for the site as per the agreed design standards, and no further issues have been reported to the LPA.

There is an Ordinary Watercourse which runs adjacent to Chapel Lane to the east of the Wickham Gate development which was reported to have been overtopping during the event. Photographs obtained shortly afterwards show the watercourse retaining water and not flowing freely. It is possible that maintenance of this watercourse and

ensuring a good flow in this channel would have the potential to reduce the severity of a flood event in the future. The downstream route of this channel requires further investigation to assess potential flood risk.

Properties in Mill Lane were severely affected in the gardens, with external flooding causing damage to retaining walls and flooding exterior buildings. Internal flooding also occurred, although extents are not currently known.

As much of the flow in this area comes across the fields to the southwest of the properties affected, with additional flow from Chapel Lane and Mill Lane, the potential for mitigation to manage water in the upper catchment should be considered. Examples include natural flood management (NFM), such as an attenuation pond, or additional watercourse infrastructure.

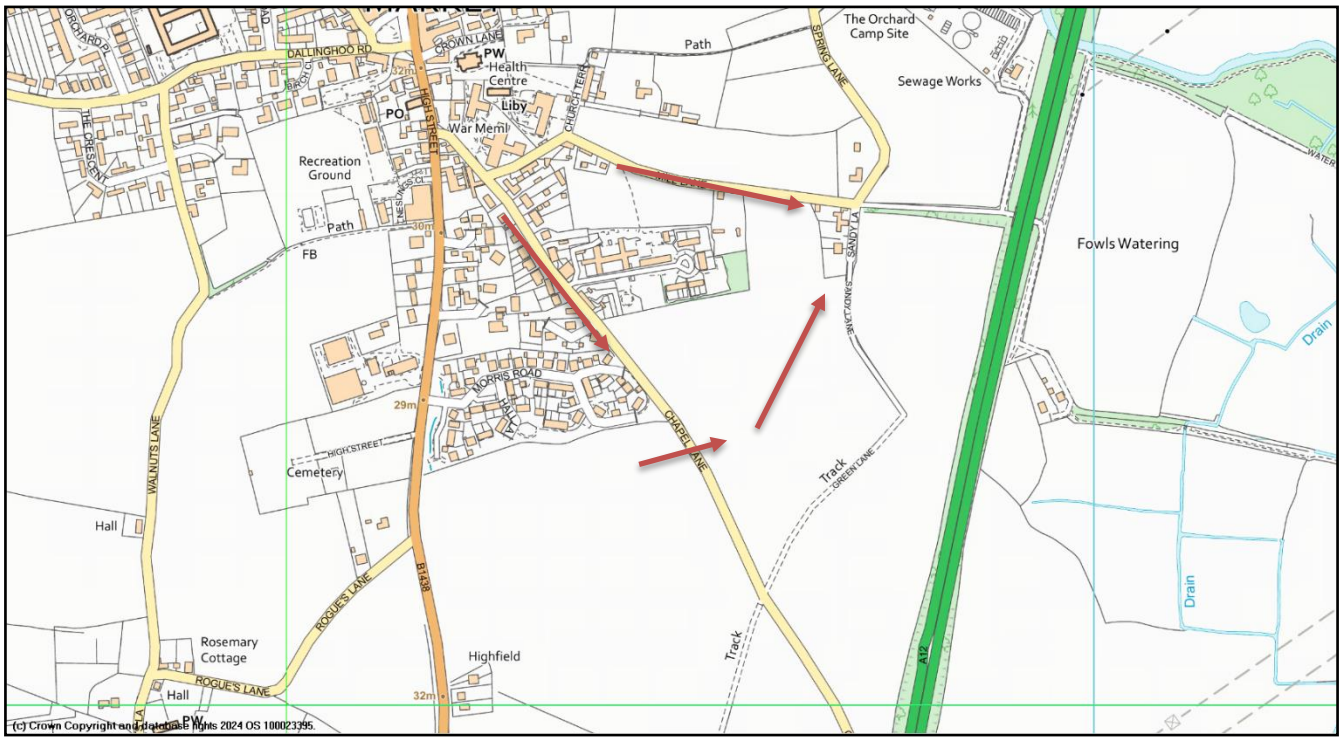

Figure 8 - Event flow paths (east)

In summary:

- Mill Lane is a high risk area for surface water flooding and the sheer volume of water from rainfall is likely to be the main cause of the flooding in this area.
- Possible ordinary watercourse maintenance in the area will allow a better flow path for the water to escape.
- Possible natural flood management opportunity which may reduce flood risk in this area.

LLFA Recommended Action(s):

- Ensure correct maintenance of the watercourses in the area are regularly carried out and any issues/obvious blockages are highlighted to the relevant RMA/landowner/Parish as soon as possible.
- Investigate the possibility of NFM in field to the south of the area affected.

3. South – Morris Road and High Street (South)

The southern part of Wickham Market was affected by surface water flooding. A few properties are known to have been affected in the area. There are low spots on the west side of the High Street which surface water flows towards. Properties in this area were affected from significant rainfall and water running off the highway.

There is a significant number of highway drainage assets in this area, many of which may not have been operating at full capacity at the time of the event according to the highway authority's asset recording software. This could have led to an increase in severity of flooding in the area due to water not being able to drain away effectively. However, due to the significant volume of rain, even if the gullies were fully operational, they may not have made a significant difference as it is likely that the drainage network's design capacity was exceeded.

Properties on Morris Road are reported to have been affected. Little information is available for this area with regards to extents of the flooding, and it falls outside the area predicted to be at significant flood risk on the national maps. However, it is likely that flooding in these locations was from surface water from the High Street. It is likely flooding was exacerbated by a lack of fully functioning highway gullies just to the north of the affected area and possibly some difficulties draining away down the watercourse to the south which borders the field boundary. Works have taken place to this watercourse as part of the build of the new housing estates to improve the onwards flow.

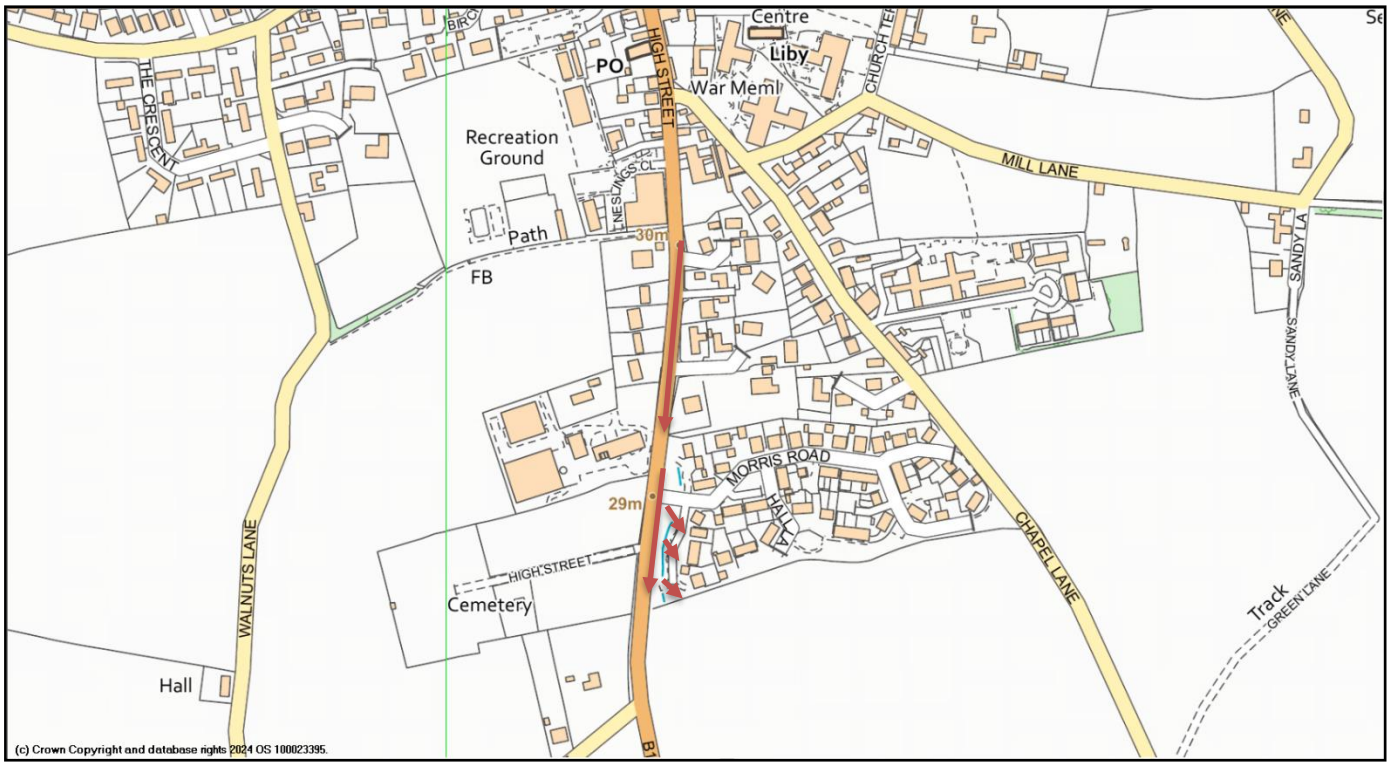

Figure 9 - Event flow paths (south)

In summary:

- Significant rainfall resulted in high levels of surface water runoff, possibly exacerbated by a lack of effectively working highways drainage assets and poorly maintained watercourse preventing onward flow.

LLFA Recommended Action(s):

- SCC Highways to investigate area where significant number of drain gullies are blocked and try to get these working effectively again.
- As a result of the new development under construction to the south, a new footway is being put in place which due to the raised curb may channel the water into the new sites SuDS features which could make an improvement in future events.

4. West – Affecting Broad Road, Broadway, and Orchard Place

West Wickham Market has a high-risk surface water flow path which runs from the west of Orchard Place, through the primary school field and into the village via Broadway. More than 10 properties are known to have been affected in this area of the Village.

Reports from the area suggest that the flooding is most likely to have occurred from surface water runoff from the surrounding fields. As described in the catchment characteristics element of this report, there is a large catchment to the west of Wickham Market which is comprised of mostly slow permeating soils. Coupled with

the already saturated conditions and significant rainfall event, the speed of onset and volume of water overwhelmed the drainage system meaning the water could not get away quickly enough.

Residents reported that surface water from the Oaks development to the west is all piped into the watercourse bordering the field and may have contributed to the overall waterflow in this location. It should be noted that the high level of rainfall experienced during the event, it is likely that the watercourse would be overwhelmed regardless of additional connections. Looking into the historic planning records for the development, there is a controlled flow of 5 litres per seconds allowed by the design plans and some attenuation features present to ensure this is not exceeded. There are several factors which could prevent this from working at full efficiency, meaning there is no guarantee this flow was not a contributing factor.

Orchard Place was affected from the west by surface water runoff and reports suggest water entered some of the properties from the back. Other reports suggest overwhelmed or slow draining highways gullies caused the road to flood and enter properties from the front, as water spilled off the highway.

Highway drainage records show all the gully assets in the area to be working upon the last inspection (February 2023) and the only known highways drainage issue on record is significantly west of Orchard Place on Gelham Hall Road, suggesting that it was a capacity issue rather than a blockage.

There is a small watercourse which runs around the northern and western edge of Orchard Place, designed to take the water from the surrounding fields and allow it to flow through the village towards the river. Part of this watercourse is piped with a channel still visible above. It is known that the piped section reaches as far as an inspection chamber which borders the west side of the school field where it is joined by pipes from the highway drainage network from Dalinghoo Road and a drainage pipe from the nearby tennis courts. The flow capacity of these pipes is unknown as is the current state of repair. Ownership has not been determined. Residents and EA representatives have witnessed this chamber bubbling up through the ground on the western side, suggesting there is either a capacity issue or a blockage of some kind preventing the correct flow of water in the piped section.

Following a site visit to the school in June of 2024 it was discovered the pipe appears to continue to beyond the school field and seems to continue into the housing area of Broadway and Broad Road. However, ownership and length of the pipe is still unclear, meaning there is a strong possibility there is some maintenance issues with the pipe which may have contributed to slowing the flow of water in this area preventing efficient water egress.

The above-described watercourse and piped section was overwhelmed, and the resulting flow travelled through gardens and onto the highway to affect properties from the front and rear. Reports from residents indicate that the piped section may not be

working effectively due to damage or collapse, but ownership and maintenance of the pipe has not been determined.

Reports from Broadway and Broad Road, suggest a similar source of over land flows from the fields to the west, and overwhelmed drainage networks, causing flooding to the front and back of the properties. It is unclear if water from the overtopped watercourse (north of Orchard Place) travelled across the school field and added to the flood water in this area. However, water flow from the fields to the west was cited as a major contributing factor by residents.

Water appeared to flow down the footpath located between two houses on the west side of Broadway. This flow overwhelmed the highway drainage network and caused the road to flood, accumulating at the lowest points of the local topography, between Broadway and Broad Road. The properties located on the east side of Broadway have gardens which are back-to-back with the properties on the west side of Broad Road. As the water flowed to the lowest point, it flooded the back gardens of these properties on both roads which then eventually entered the properties via the back doors. Due to the low-lying topography, the properties that were worst affected are identified as being at high-risk of flooding from surface water. Due to Broad Road being slightly higher, the flood water did not reach the highway on Broad Road.

Historic mapping of the west side of Wickham Market shows there to be a small number of historic pond features which appear to have been filled in at some point in the past (maps taken from 1842-1952). The ponds may have historically attenuated water during high rainfall events, a feature which has now been lost.

According to highways drainage records, all the gully assets in the area were working effectively upon last inspection (February 2023), and some work was carried out during the event.

Reports suggested there is an issue with drainage at the primary school, although no evidence has been found that any additional impact was directly caused by the primary school or its field. Following a visit to the school there are several drainage features on the impermeable surface to the rear of the school which appeared to be significantly blocked with silt and debris which could have reduced the flow of the water away from the area. Although, it is likely this issue would have only affected the school itself as the pipe further to the north (as described above) is more likely to be carrying water from the housing area to the west.

External flooding in the area was measured to have reached 60cm in the gardens of some properties and ranging between 10 and 20cm internally at various properties in the area.

Indicates rough alignment of unknown piped section

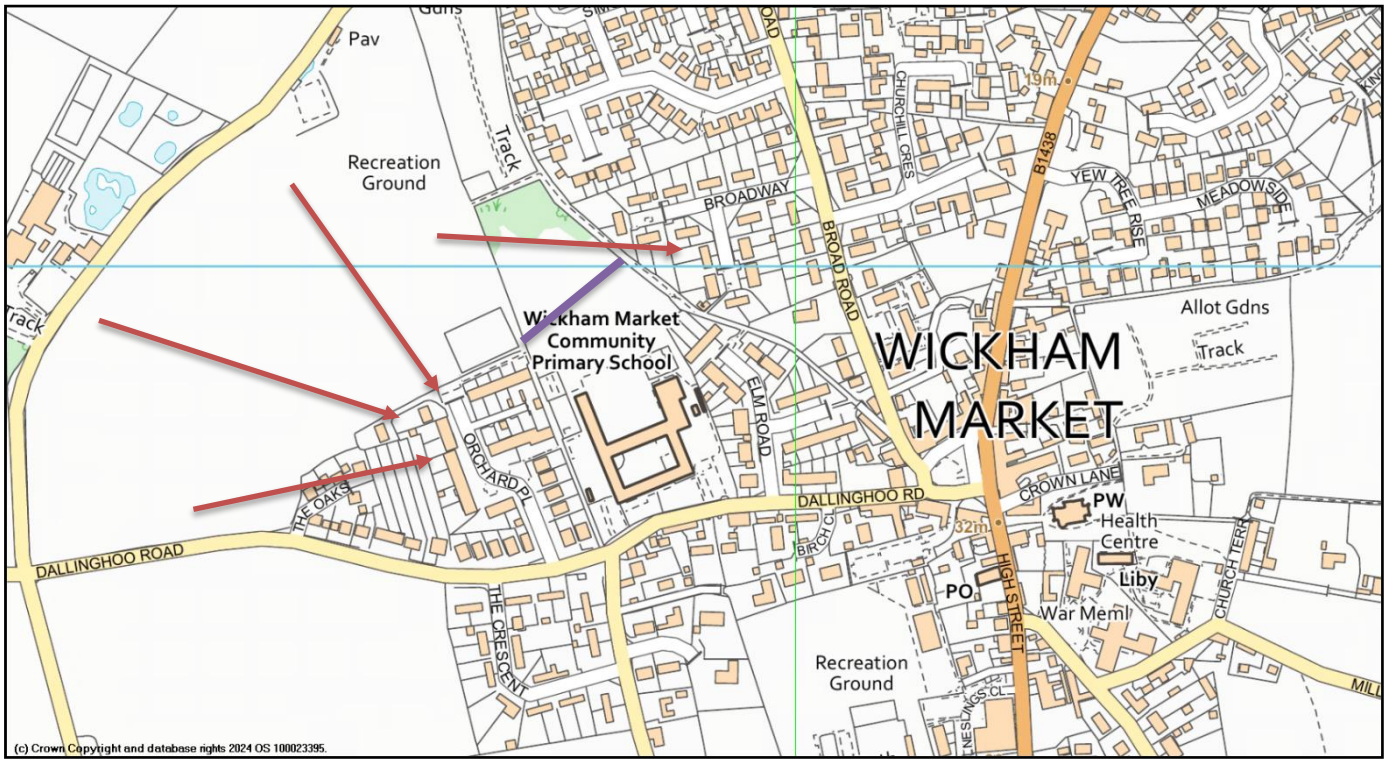

Figure 10 - Event flow paths (west)

In summary:

- Significant rainfall resulted in large volumes of surface water runoff from the fields to the west.
- Highway infrastructure became overwhelmed causing the flood water to flow to the lowest points and pool.
- Lack of maintenance and possible issues with underground pipework to the north of Orchard Place may have impeded the flow of water away from the area.
- Highways gullies were inspected and found to be working correctly in February of 2023, but reactive work took place on the day of the event in specific areas.

LLFA Recommended Action(s):

- SCC/Landowner/Parish to investigate ownership of the pipe work north of Orchard Place and confirm maintenance is carried out, to ensure its flow is maintained. CCTV of pipe may be required to ensure pipe is still in working order and to try and discover possible cause of water bubbling up.
- SCC highways to ensure regular maintenance is carried out in line with gully cleansing regime.
- Primary school to ensure gullies in the playground are regularly cleaned and maintained. CCTV inspection may be required to confirm pipes are still in working order.

- Watercourses in the area are to be regularly maintained and any issues/blockages are to be reported to the riparian owner/parish as soon as possible to ensure a good flow of water.
- Investigate possibility of NFM in catchment to the west to attempt to reduce the amount of water reaching the housing developments.
- Community to investigate rainwater harvesting systems to capture water during largescale events and reduce the severity of the event. It is important to ensure rainwater harvesting is slowly released and features are empty after each event, otherwise they become ineffective during the following event.

Photo(s) of Flooding and aftermath

Image 1 - Flooding to pastureland in north Wickham Market

Image 2 - Wickham Market bridge

Image 3 - Deben Mills

Image 4 – High water level marks post event showing erosion to brickwork

Image 5 - Post event damage

Image 6 - Post event damage

Image 7 - Post event damage

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

The following section acknowledges both RMA's and non-RMA's relevant to Wickham Market and provide an overview of their flood risk functions. The table has been compiled from information collated as part of the investigation. It is not exhaustive, and it should be acknowledged additional organisations and groups may be active within the community.

Risk Management Authority	**Relevant Flood Risk Function(s)**
Suffolk County Council	Lead local Flood Authority (LLFA), Highways Authority & Asset Owner
Environment Agency	Lead organisation for providing flood risk management under its permissive powers and warning of flooding from main river
Anglian Water	Asset Owner
East Suffolk District Council	Local Planning Authority & Asset Owner
Non-Risk Management Authority	**Relevant Flood Risk Function(s)**
Private Landowners	Riparian Responsibilities of watercourses
Private Homeowners	Improving flood resilience to property
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-RMA's have implemented or are currently in progress since Storm Babet and prior to publishing of this report.

Action	Risk Management Authority	Progress
EA have contacted highways to initiate planning of localised river desilt project north and south of the main road bridge.	Environment Agency and SCC highways authority.	Planning for work to take place in autumn 2024
EA have initiated a long-term programme to better map the flooding extents of the river Deben	Environment Agency	Hydraulic modelling to start in 2025 and will take two years

Residents and landowners have carried out work in contacting fellow landowners downstream along the length of the river Deben and encouraged them to carry out debris removal and maintenance activities which fall under riparian duties.	Landowners	Ongoing
Local landowners have acted in carrying out removal of debris in the main river and local ordinary watercourses to aid with water flow.	Landowners	Ongoing
Wickham Market parish Council have reviewed and updating the Flooding emergency plan.	Parish Council and JEPU	Complete
Wickham Market Primary School are carrying out works to investigate the clearing of the drainage systems in their playground.	Wickham Market Primary School	Ongoing
SCC LLFA investigating ownership of the piped section of watercourse from near the tennis courts to the end of its run.	SCC LLFA	Ongoing
LPA have ensured the designed water management features have been built to specification at the Wickham Gate development	Local planning Authority	Complete

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 Wickham Market. They have been derived from data and evidence collated as part of the report and have been included having been considered realistic in their implementation. The implementation of actions falls to the responsible party. Progress on the action will be monitored by Suffolk County Council but it should be acknowledged that the council has limited 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 a Community Emergency Plan that includes reference flood events – Liaison with Suffolk Resilience Forum and national flood forum if required.	Parish Council	NA	EA are supporting the SRF and Parish Council in this, providing guidance and advice on our flood warning service.
Understand the annual event probability of the rainfall & river flow across the region and specifically Wickham Market.	Environment Agency	6 months	Ongoing
Maintain rivers and watercourses to a good standard and ensure visible blockages are removed.	Landowners/ Riparian owners	NA	Ongoing
Increase the maintenance of watercourse management across the town	Landowners/ Riparian owners	NA	Ongoing
Ensure regular maintenance of highway drainage asset along key affected roads (High Street – south, Orchard Place,	SCC Highways	As per Highways schedule	Ongoing

Broadway & Broad Road)			
Investigate gullies along stretch of High Street – south and assess the potential to improve their effectiveness.	SCC Highways	Based on resource availability	
Carry out investigation of culvert north of Orchard Place to check if it is clear and allowing correct movement of water. Check if culvert is correct size and capacity for this location.	Landowner/ SCC LLFA to advise	6 months	
Investigate piped section which appears to cross the school field and locate outfall.	SCC LLFA	6 months	
Undertake clearance of silt build up in main channel of river Deben north and south of the main road bridge.	Environment Agency/ SCC Highways	Autumn 2024	Planning in progress
Maximise the take up of the £5k PFR Grant currently available to residents before the April 2025 deadline	SCC LLFA / Residents	Latest April 2025	
Medium Term Actions (e.g. longer planning timescales and potential need to source funding but potential for greater impact)			
Investigate the flood risk implications of varying amounts of silt in the Main River channel.	Environment Agency	2025	We have engaged consultants to carry out hydraulic modelling. This will help us better understand the impact that silt / soil in the channel has on flood risk in the village, and whether the Environment

			Agency's maintenance regime could be improved.
Check proposed water management strategies put in place as part of recent building developments (Wickham Gate) have been constructed and maintained as specified in approved plans.	Local planning authority supported by SCC LLFA if appropriate	2 years	Ongoing
Investigate watercourse which runs adjacent to Chapel Lane to ensure it has a suitable capacity and is well maintained.	Landowner/ Riparian owner	As soon as is practicable	Ongoing
Investigate rainwater collection systems which can help to reduce the intensity of discharge during storm events.	Residents (Orchard place, Broadway and Broad Road)	As soon as is practicable	Ongoing
Investigate if the pumping station located north of the High Street has adequate capacity and check if a non-return valve on the outfall would be a suitable addition to prevent water ingress during high river levels.	Anglian Water	1-2 years	
Investigate potential new/additional highway drainage assets along High Street to manage surface water flows	SCC Highways	Based on resource availability	
Improved understanding and	SCC LLFA/EA	2027	Work to start on updating the River

modelling of fluvial and pluvial flooding within the village to inform bids for potential capital works.			Deben (Main River) hydraulic modelling in 2025.
Investigate possible NFM options in fields to the south of Mill Lane, West of Spring Lane (just south of king Edward avenue) and in the fields to the west of the village (including the school field) which may have the potential to reduce flood risk to properties.	Landowner supported by SCC LLFA	Based on funding and resource availability	
Long Term actions (significantly longer timescale and budget required with potentially greater positive impact)			
Improvements to highway drainage network to manage surface water flows if investigation works suggest it is viable.	Highways Authority	Based on funding and resource availability	
Investigate the potential feasibility (economic, technical & environmental) of a range of capital interventions to manage the flood risk from the River Deben.	Environment Agency/SCC LLFA/Landowners	2027 onwards	Work to start once hydraulic modelling has been updated.

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

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The implications for producing Flood Investigation Reports and any consequences of blight have been considered. The process of gaining insurance for a property and/or purchasing/selling a property and any flooding issues identified are considered a separate and legally binding process placed upon property owners and this is independent of and does not relate to 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.

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