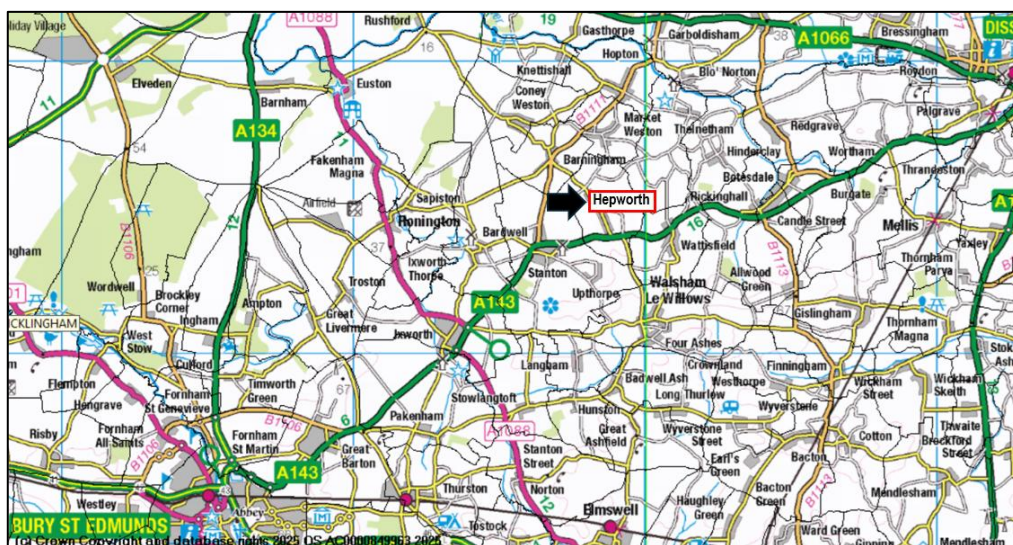


Section 19 Flood and Water Management Act 2010

Hepworth Flood Investigation – Storm Babet 2023



	Name	Date
Report Author	Susie Clark	
Responsible Officer:	Susie Clark	
Checked by:	Matt Hullis	02/10/2025
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Executive Summary

Storm Babet caused significant disruption to communities across Suffolk between 18th - 21st October 2023. Hepworth was a community that was significantly impacted, with approximately five 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
- make recommendations for actions by relevant responsible organisations, landowners or homeowners.

Hepworth is located in an area at significant risk of pluvial flooding and the nature of the surrounding topography and geology contributes to the susceptibility of the community to flooding. Hepworth is a rural catchment with low-lying areas where multiple flood water flow paths converge. Most of the local geology and soils are susceptible to high run off, making a high number of properties in the village vulnerable to flooding due to intense rainfall events. However, localised variations in geology also facilitate groundwater flooding.

Storm Babet delivered significant rainfall to the catchment, following an extended period of above average rainfall. Impacts within Hepworth were widespread and for the purposes of this report, the affected areas have been categorised into two 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 Hepworth 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 flow paths converged and saw the resultant internal flooding of property.

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 Hepworth. For short term measures, key highlights include the implementation of community flood plans, maximising Property Flood Resilience (PFR) measures, and maintenance of watercourses. For medium to longer term recommendations, there is emphasis on the management of water from rural land through 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. 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 gauging 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 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.

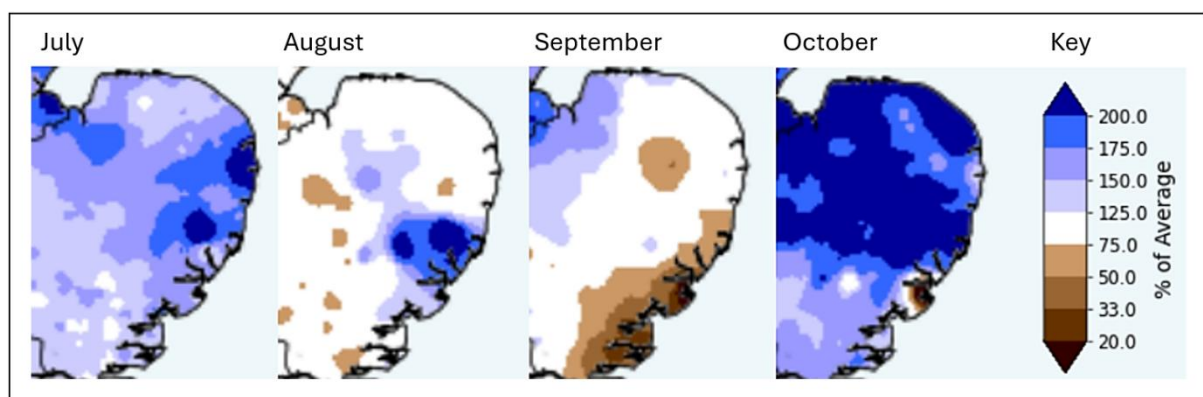


Figure 1. Average monthly rainfall (July – October 2023) as a percentage of the historic average monthly rainfall

The following report acknowledges that October 2023 and particularly Storm Babet, was an extreme event and will assess the probable causes and impacts. The report will recommend measures to reduce the risk of flooding within the location, in line with best practice, ranging 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. However, they should not be relied upon as a guaranteed failsafe to mitigate against all future flooding.

2. Location of flooding

The village of Hepworth is located in the district of West Suffolk District Council, approximately nine miles west of Diss and 10 miles northeast of Bury St Edmunds (Figure 2).

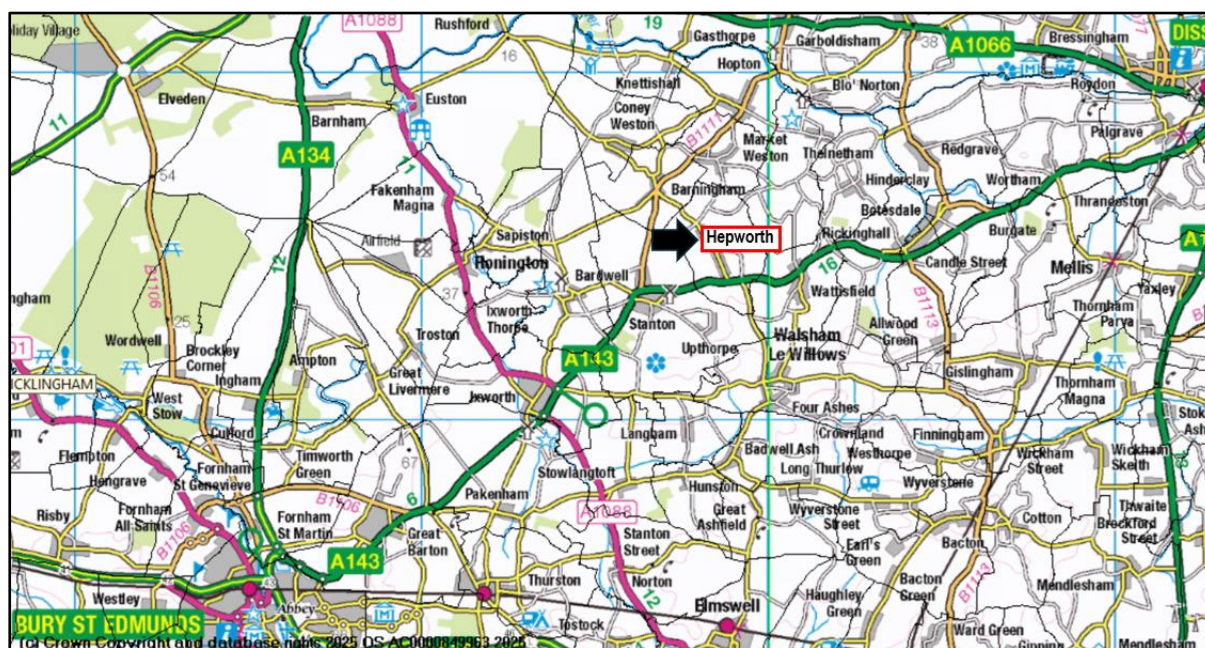


Figure 2. Investigation area map

There are no statutory main rivers in the parish of Hepworth (Figure 3). (The Environment Agency has permissive powers to carry out maintenance, improvement or construction work on statutory main rivers to manage flood risk). Lead Local Flood Authorities (LLFAs) and Internal Drainage Boards (IDBs) manage the flood risk from ordinary watercourses but responsibility for maintaining watercourses rests with the Riparian Landowner, defined as those who have a river, stream or ditch which runs next to or through their land or property. In Hepworth parish, there are no ordinary watercourses where the IDBs manage the flood risk. Therefore, the flood risk from ordinary watercourses in Hepworth is managed by the LLFA (Suffolk County Council).

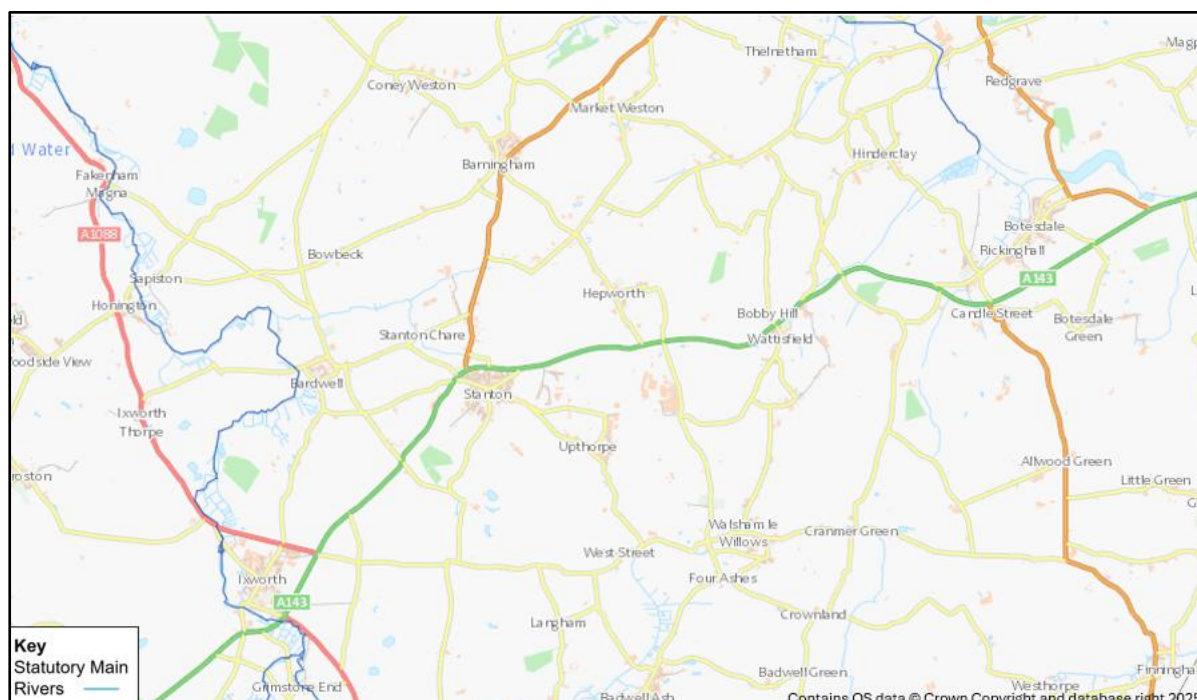


Figure 3. Location of statutory main rivers (Environment Agency)

On the 20th October 2023, Storm Babet resulted in significant rainfall across Suffolk on already saturated ground due to above average rainfall in the preceding weeks. Hepworth was significantly impacted with approximately five properties reporting internal flooding. Flood water was described as coming from several sources including surface water runoff from surrounding fields (pluvial), the overtopping of local watercourses (fluvial), groundwater and overwhelmed 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 two distinct zones (Figure 4):

1. The Street and North Common
2. Church Lane

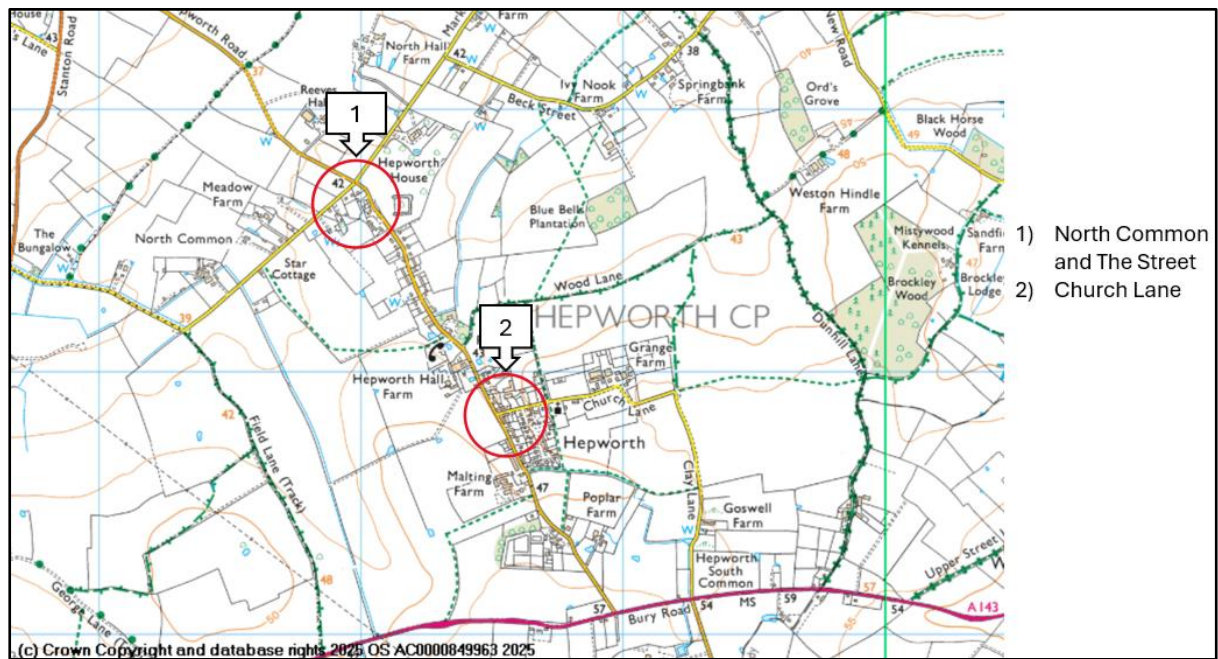


Figure 4. Distinct flood zones

3. Records of any historical flooding

A review of Suffolk County Council's Highways reporting tool, local and social media reports indicated previous episodes of internal flooding of property in zone 1 (North Common and The Street) above in December 2020. Affected property in zone 2 (Church Lane) reported being flooded twice prior to Storm Babet.

The Environment Agency hold no historical records of flooding for the area of Hepworth.

4. Predicted Flood Risk

Areas of Hepworth are at significant surface water (pluvial) flood risk. High surface water flood risk is projected for all the affected property in The Street and North Common and low surface water flood risk is projected for affected property in Church Lane. It should be noted that low chance of flooding indicates a flood risk during extreme events, such as Storm Babet.



Figure 5. Projected flood risk from surface water (Environment Agency)

There is no projected fluvial flood risk within the parish of Hepworth.

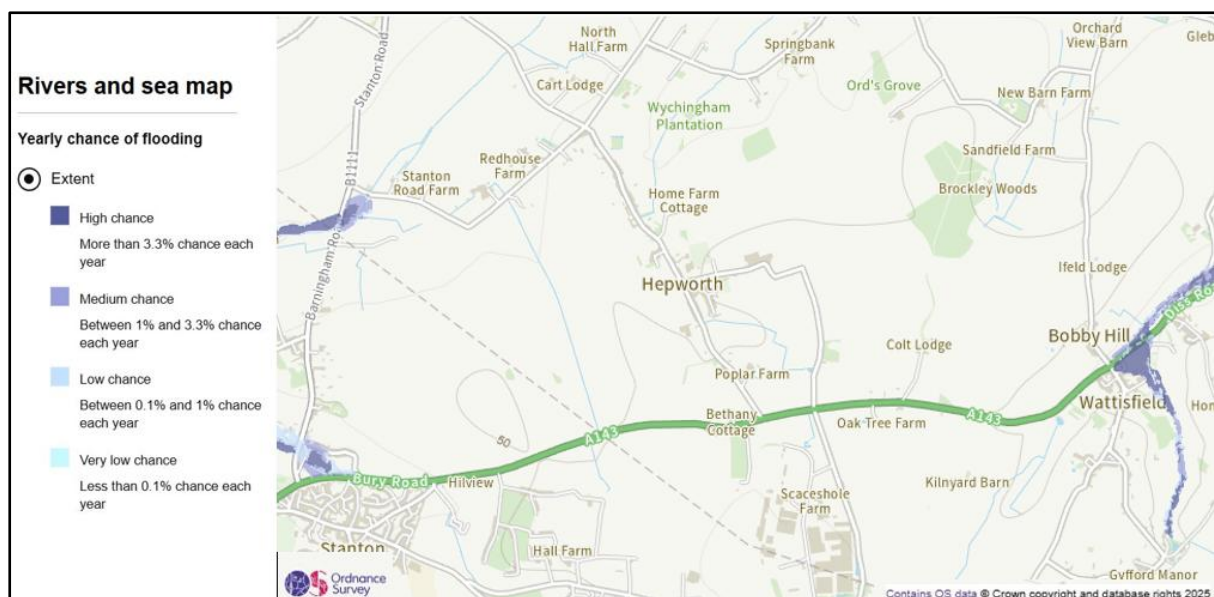


Figure 6. Projected flood risk from rivers and seas (Environment Agency)

5. Catchment characteristics

Most of the parish (including land to the west of The Street) drains towards two valleys which descend to the northwest, both converging and then draining towards the west of the parish (Figure 7). The central eastern part of the parish includes two valleys which drain towards the northeast. This area abuts The Street on the east side, approximately between the location of the parish council village sign and Wood Lane at the southern end and the junction between The Street and Market Weston Road at the northern end. The Street itself descends gradually towards the northwest. The

village of Hepworth is situated in a rural area with farmland used predominantly for arable agriculture.

During high rainfall events, considerable flows of water converge towards low-lying areas of the village, meaning that overwhelmed infrastructure and watercourses may be observed at these times.

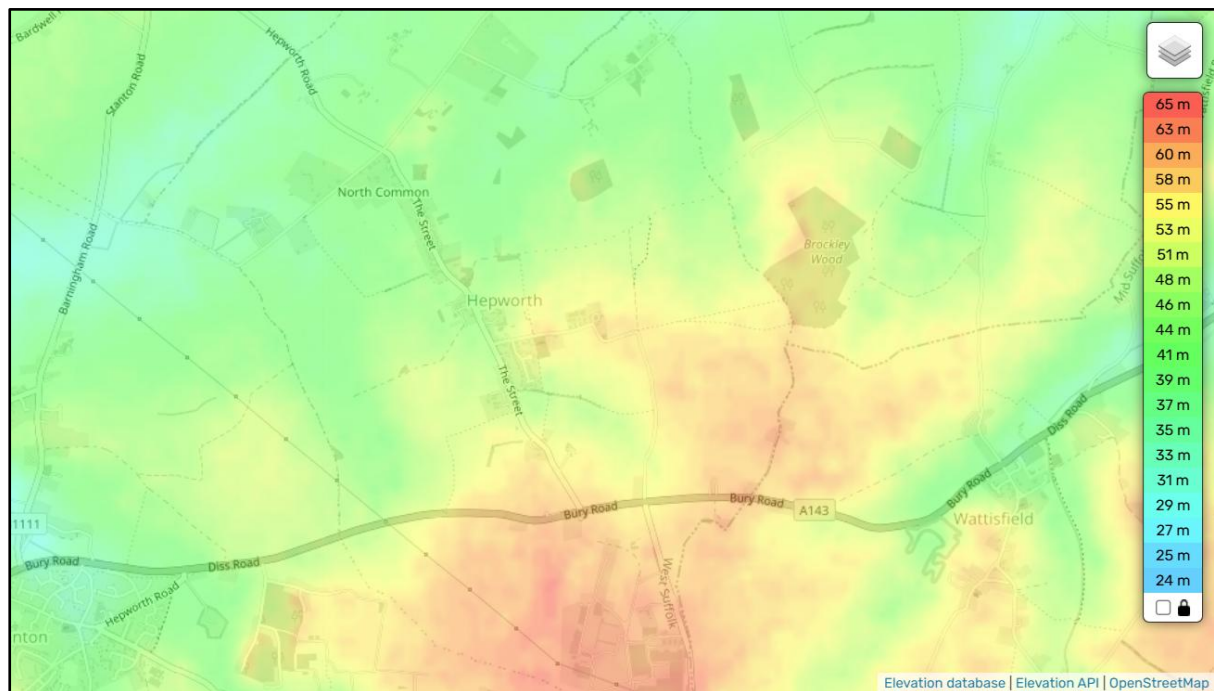


Figure 7. Topography (TessaDEM as cited in topographic-map.com)

The soils surrounding Hepworth are slowly permeable, seasonally wet and loamy and clayey. This means that water infiltrates the soil more slowly and surface water runoff is greater, particularly during intense rainfall. However, the saturated nature of the soils leading up to the event would also have prevented some infiltration.

Figure 8 shows that much of the superficial geology surrounding Hepworth 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. Generally, this has a low permeability, meaning water will tend to flow off it before it can infiltrate in short term events, which also reflects the reports collected during Storm Babet. However, there are also some more permeable isolated areas of sand and gravel, including under part of Church Lane.



Figure 8. Superficial geology (BGS Viewer)

The predominant bedrock in Hepworth and in the surrounding upstream area of the catchment consists of various chalk formations which are generally relatively permeable. However, during short term intense rainfall events, soil composition and superficial geology become more influential in affecting the volume of surface water runoff. Combined with the topography within the catchment, the soils and superficial geology make Hepworth susceptible to extreme rainfall events. Saturated ground and high rainfall, like that of Storm Babet, will further emphasise the vulnerability of the parish and localised flooding could be experienced.

Flooding Sources, Pathways & Receptors

Storm Babet was an extreme event which came at a time when Suffolk had experienced a significant amount of rainfall in the preceding weeks.

The description of the flood events described below will discuss the probable sources of flooding, the observed flow paths through the community and the receptors which have been affected. The term ‘floodwater’ may be used to describe both fluvial (water from a watercourse) and pluvial (surface water run-off) flooding. This section has been prepared using reports submitted to Suffolk County Council via the online Highways Reporting Tool, a subsequent request to Hepworth parish council for community information and site visits.

Data from surrounding Environment Agency rain gauges indicates that a significant volume of rain was experienced during Storm Babet. The nearest rainfall gauge to Hepworth is Stanton (approximately one and a half miles west of Hepworth). The Stanton rainfall gauge recorded 72.7mm of rain between 19 Oct 20:00 and 20 Oct 16:45. 31.1mm (more than half) of rainfall was received between 8:00 and 12:15 on the morning of 20 October.

The Environment Agency issue two types of warning when flooding is possible from a main river. These are:

1. Flood Alert – Flooding is possible. Be prepared. - usually issued between 2 and 12 hours before flooding.
2. Flood Warning - Flooding is expected. Immediate action required – usually issued 30 minutes to 2 hours before flooding.

Hepworth is not covered by the Environment Agency Flood Warning Service.

Detailed descriptions of each investigation area can be found below.

1. North Common and The Street

This was the northernmost area of Hepworth where property was affected by internal flooding. One property in North Common and three properties nearby in The Street were reported to have flooded. Affected property was projected to be at high surface water flood risk and no fluvial flood risk.

Due to the extreme rainfall, water levels rose in a watercourse to the south of affected property on The Street, causing the watercourse to overtop and merge with surface water collecting at a low point on The Street and flood three properties. The watercourse was reported to have been in need of maintenance. This floodwater flowed north, combining with further surface water and exceeding the capacity of private property surface water drainage systems. On reaching North Common (road) and combining with more surface water, the capacity of the piped culvert under the road was exceeded, causing floodwater to accumulate on the south side of the highway. The ditch on the north side of North Common (road) was reported to be obstructed by tree roots and also overtopped, flowing south across the highway and into lower-level driveways and gardens and contributing further to the flooding of property. Due to the extreme rainfall conditions, the capacity of the wider drainage system, even if fully functioning, would have been exceeded by the amount of water present.

Sewage was also reported to have backed up in property on The Street. Anglian Water confirmed external sewer flooding further south on The Street due to a defect in a sewer pipe combined with hydraulic overload of system due to extreme rainfall.

Internal property flood water levels were reported to have reached in excess of 30cm.

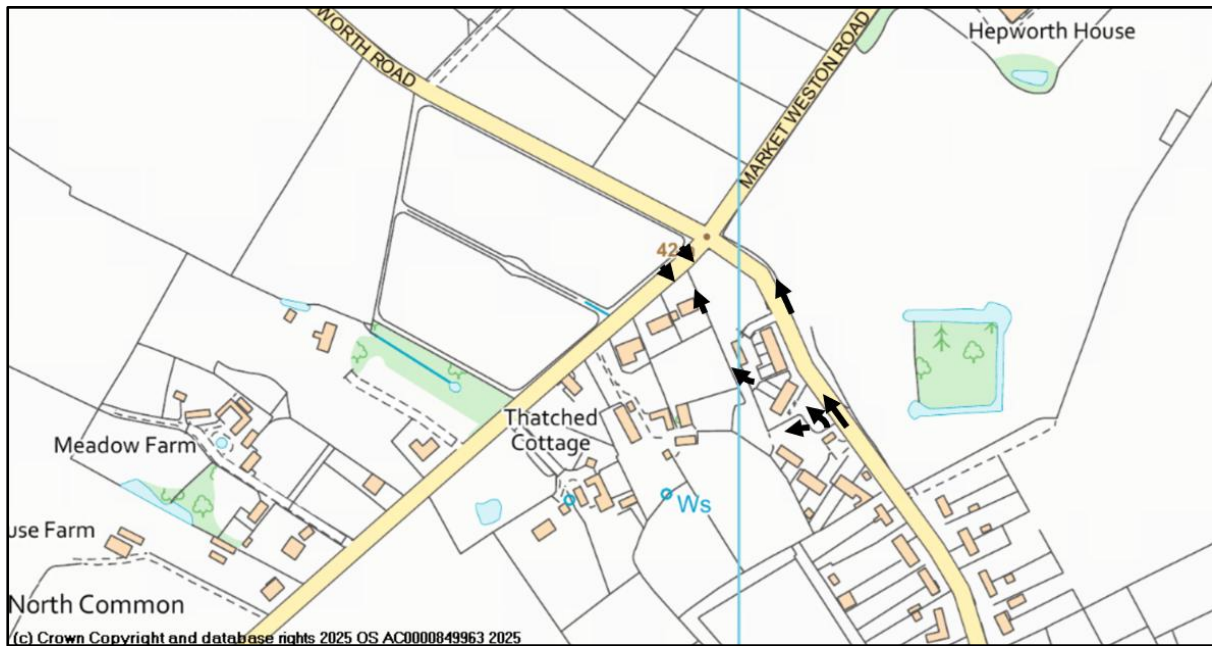


Figure 9. Approximate floodwater flow paths, North Common and The Street

In summary:

- Intense and prolonged rainfall exceeded the capacity of field drainage systems.
- Highways drainage in The Street was overwhelmed.
- A watercourse to the south of affected property overtopped.
- The watercourse was reported to have been in need of maintenance.
- Floodwater from the watercourse and surface water merged.
- The floodwater flowed north, exceeding the capacity of private surface water drainage systems.
- Sewage was reported to have backed up in property on The Street.
- External sewer flooding further south on The Street occurred due to a defect in a sewer pipe combined with hydraulic overload of system.
- Culverts under North Common (road) were reported to have exceeded capacity.
- A ditch on the north side of North Common (road) was reported to have been obstructed by vegetation and overtopped, flowing south across the highway.
- Due to the extreme rainfall conditions, the capacity of the wider drainage system, even if fully functioning, would have been exceeded.

Recommended actions:

- Residents to install Property Flood Resilience (PFR) measures.
- Suffolk Highways to investigate the functioning and capacity of the piped culvert under North Common (road).

- Suffolk Highways to ensure completion of highway drainage asset cyclic maintenance.
- Anglian Water to investigate and repair defects in sewer pipe on The Street.
- Explore potential natural flood management measures on surface water flow paths in the upstream catchment (eg. leaky dams, buffer strips, tree planting and attenuation ponds and floodplain reconnection) to “slow the flow” and attenuate water.
- Landowners to carry out watercourse maintenance, to reduce flood risk as necessary in accordance with their riparian responsibilities.

2. Church Lane

Affected property was projected to be at no fluvial flood risk and on the edge of an area of low surface water flood risk. At least one property was reported to have flooded at this location. Surface water runoff from fields was reported to have combined with surface water on Church Lane and flowed down Church Lane, contributing to flooding of the junction with The Street. Gullies in the vicinity of affected property on Church Lane were reported to be blocked. They may not have been fully functioning during Storm Babet as they were reported not to be fully functional during subsequent routine maintenance visits. It was noted in addition that at least one gully was partially obstructed by wooden sleepers. Groundwater may also have infiltrated the drainage system. The condition of the gullies merits further investigation.

Affected property (which is at a slightly higher level than the junction between Church Lane and The Street) was reported to have flooded from water levels rising through the floor. Impacted property has flooded on previous occasions. There is a small isolated area of sand and gravel in the superficial geology underneath and surrounding affected property on Church Lane which allows the groundwater more easily to rise to ground level compared with the wider area, where the superficial geology is clay-based.

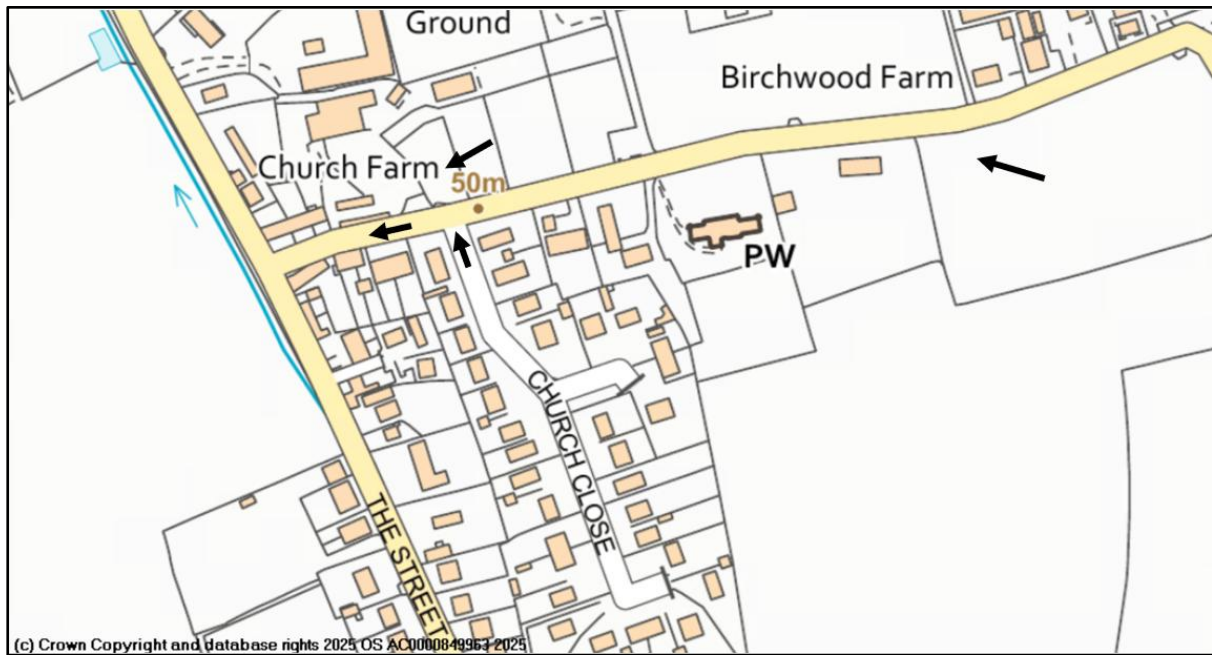


Figure 10 Approximate flood water flow paths in Church Lane

In summary:

- Affected property was flooded from groundwater, exacerbated by local superficial geology.
- Intense and prolonged rainfall exceeded the capacity of local field drainage systems and surface water flowed across fields and down Church Lane.
- Gullies in Church Lane were reported to be blocked.

Recommended actions:

- Residents to install Property Flood Resilience (PFR) measures.
- SCC Highways to investigate the functioning of gullies in the vicinity of affected property on Church Lane.
- Suffolk Highways to ensure completion of highway drainage asset cyclic maintenance.

Risk Management Authorities, Non-Risk Management Authorities and flood risk functions

Risk Management Authority	Relevant Flood Risk Function(s)
Suffolk County Council	Lead Local Flood Authority, Highways Authority & Asset Owner
Environment Agency	Lead organisation for providing flood risk management under its permissive powers and warning of flooding from main rivers
West Suffolk District Council	Local Planning Authority & Asset Owner
Non-Risk Management Authority	Relevant Flood Risk Function(s)
Private Landowners	Riparian responsibilities for 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-RMAs have implemented or are currently in progress since Storm Babet and prior to publishing of this report.

Action	Responsible Party	Progress
Offer of £5k Property Flood Resilience (PFR) grant funded scheme to eligible properties that flooded during Storms Babet	Suffolk County Council Lead Local Flood Authority (LLFA)	Application window now closed. Installation of PFR measures on approved applications has been extended to December 2025.
Ensure riparian landowner responsibilities are understood with regard to watercourse management	SCC LLFA	SCC published " Flood Smart Living " handbook designed to increase flood resilience for residents, landowners and communities, November 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 Hepworth. 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 (May 2026)
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 plans to manage future flood events –Liaison with Suffolk Joint Emergency Planning Unit	Hepworth Parish Council	6 months	No update at this time
Residents to consider installing Property Flood Resilience (PFR) measures to property to reduce damage caused by flooding.	Residents	N/A	DEFRA PFR Grant has now closed for new applications. Installation of PFR measures on approved applications had been extended to December 2025. Further information on PFR measures can be found within SCC published "Flood Smart Living" handbook. There are currently no active PFR schemes being managed by the LLFA in Suffolk.
Investigate the functioning and capacity of the piped culvert under North Common (road)	SCC Highways	6 months	Complete Update from Suffolk Highways: February 2026 Jetting and survey carried out on highways drainage assets North Common Road. All assets left clean and running with no reported issues.

Investigate the functioning of gullies in the vicinity of affected property on Church Lane.	SCC Highways	6 months	Complete Update from Suffolk Highways: January 2026 Jetting and survey carried out on highways drainage assets Church Lane. Two issues reported, Manhole buried in hedge line, and some damage to another chamber that may require future repairs.
Suffolk Highways to ensure completion of highway drainage asset cyclic maintenance	SCC Highways		Update from Suffolk highways: Cyclical Visits completed August 2025 and next due July/August 2026.
Anglian Water to investigate and repair defects in sewer pipe on The Street.	Anglian Water	6 months	Ongoing Anglian Water investigations are on going
Landowners to carry out watercourse maintenance, including culverts, to reduce flood risk as necessary in accordance with their riparian responsibilities. (See Appendix A)	Riparian landowners	6 months	Further information on Riparian Ownership can be found within SCC published "Flood Smart Living" handbook.
Medium Term Actions (e.g. longer planning timescales and potential need to source funding but potential for greater impact)			
Explore potential natural flood management measures on surface water flow paths in the upstream catchment (eg. leaky dams, buffer strips, tree planting and attenuation ponds and floodplain reconnection) to "slow the flow" and attenuate water. (See Appendix A)	Landowners supported by SCC LLFA, EA	12 - 24 months	Ongoing – no further update at this time.

Deliver improvements to highway drainage asset if investigation works suggest it is beneficial and viable.	SCC Highways	12-24 months	Ongoing – no further update at this time.
Long Term actions (significantly longer timescale and budget required with potentially greater positive impact)			
Deliver any capital interventions that are economically, technically and environmentally feasible and acceptable to improve the flood resilience of the village, eg. NFM and PFR measures. (See Appendix A)	SCC LLFA, EA and landowners	TBC	Ongoing – no update expected at this time.

Approval

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

Reviewer	Date of Review
Ellie Coleby	08/09/2026

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.

Suffolk County Council forbids the reproduction of this report or its contents by any third party without prior agreement.

Appendix A – Indicative locations for NFM and watercourse maintenance

