

Lead Local Flood Authority
Section 19 (Flood and Water Management Act
2010)
Flood Investigation Report

Report Title:

Ingate and Fredericks Road, Beccles

Report Reference(s):

| | |
|-------------|-------------|
| FW2019-1120 | |
| FW2019-1917 | FW2019-1930 |
| FW2019-1921 | FW2019-1935 |
| FW2019-1928 | FW2019-1939 |

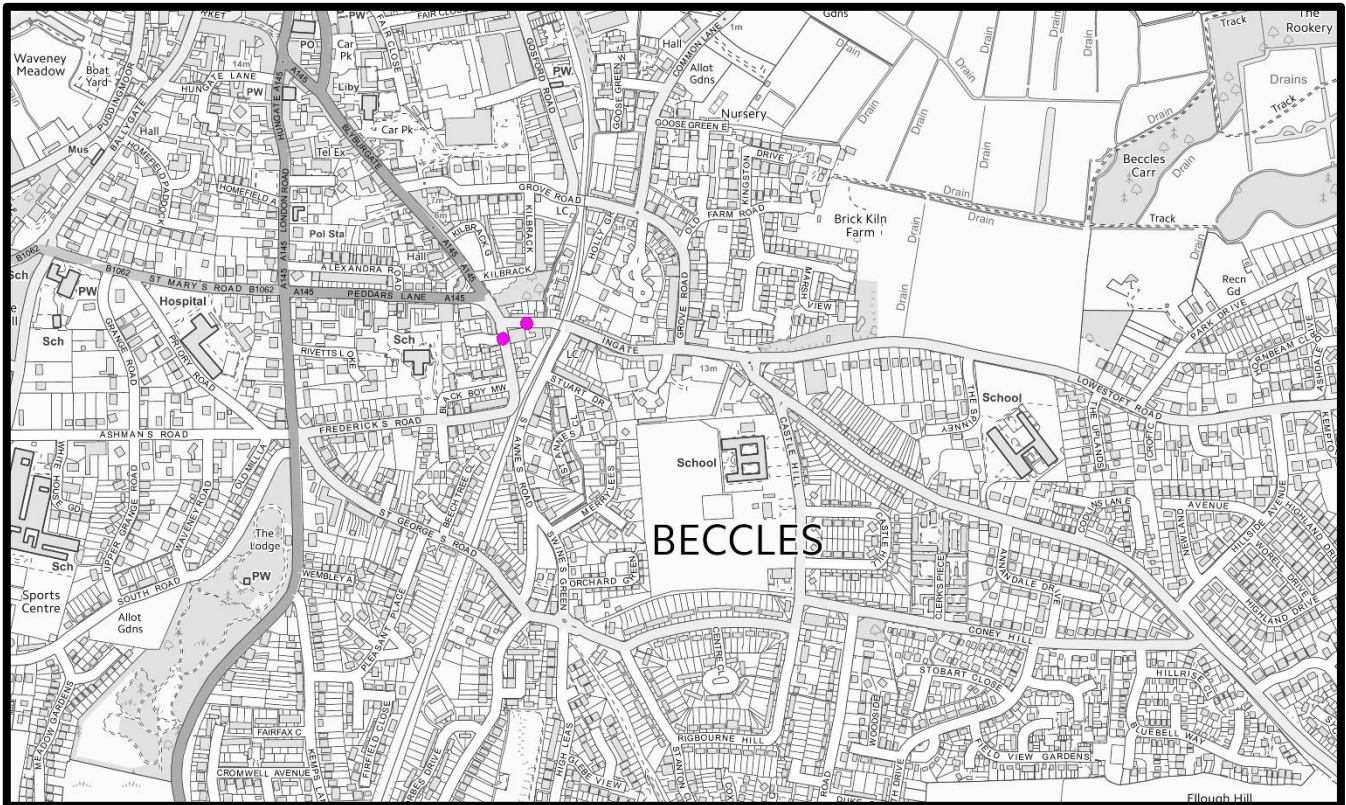
| | Name | Date |
|-----------------------|-------------------------------------------|-------------|
| Lead Officer: | Steven Halls | |
| Created by: | Steven Halls | 21/03/2020 |
| Checked by: | Simon Curl | 20/05/2020 |
| RMA Review: | Suffolk County Council (Highways) & AW | 27/07/2020 |
| Approved by: | Matt Hullis | 25/09/2020 |
| Date Published | | 25/09/2020 |

Flood Investigation Report

- 1.0** Suffolk County Council as a Lead Local Flood Authority (LLFA) has determined that in accordance with criteria, it considered it necessary or appropriate to carry out an investigation into this flood event 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).
- 2.0 Reference/s:**
- 2.1 Location:** Ingate Road and Fredericks Road, Beccles, Suffolk
- 2.2 Flood Event Date:** 6th October 2019
- 2.3 Reported to SCC Date:** 7th October 2019
- 2.4 Investigation Commencement Date:** 20th November 2019
- 2.5 Criteria for investigation:**

| Criteria for an investigation (as per Appendix D of the Suffolk Flood Risk Management Strategy): | ✓/X |
|----------------------------------------------------------------------------------------------------------|------------|
| There was a risk to life as a result of flooding? | x |
| 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 as a result of flooding | x |
| Critical infrastructure was affected by flooding | x |
| There is ambiguity surrounding the source or responsibility of a flood incident | ✓ |

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2.6 OS Grid Reference: TM 42599 89910

2.7 Extent of flooding: A total of 7 properties flooded internally. Ingate and Fredericks Road flooded. Total affected area 0.2Ha (2000m²)

2.8 Effect of flooding: Properties internally flooded up to a depth of 400mm. Rear gardens also flooded. Mixture of stormwater and foul (sewage) flooding reported. Highway also flooded to similar flood depths outside affected properties.

2.9 History: No known previous major flood events but sporadic incidents of minor flooding to Ingate and Frederick Rd reported via SCC Highways.

2.10 Flooding Source: Capacity of surface water drainage systems (highway and private drainage) and foul (Anglian water) exceeded due to intense storm event on the 6th October 2019. Exceedance volumes accumulated in a large depression within Ingate leading to migration into properties, cars also splashed water into properties.

Images from customers show water levels in the town's main open drain was especially high. This canalised channel drains both urban and rural catchments to the SW of the town.

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2.11 Causes:

- Substantial amount of rainfall over a relatively short duration (56mm total rainfall in 9hrs). Moderate amount of rainfall in the early morning followed by a large spike at 11.30am for half an hour. Overall, the storm equated to a 23yr storm (4.3% AEP). (*return periods based on data collected from Environment Agency rain gauges and FEH13 Depth Duration Frequency curves).
- The site is identified as a surface water flood risk zone on national mapping and within fluvial flood zone 3. Ingate and Fredericks Rd sit within the natural valley of the towns open drain (a concrete lined watercourse) and are bounded by higher elevations of the railway crossing, Blyburgate and Black Boy Meadow. Lack of safe exceedance routes for runoff around buildings which means the properties suffer from the localised ponding at the front and rear of the buildings. Attempts to reduce floodwater levels in Ingate Rd can be seen by large weep holes cut into the headwall over the local open drain at grid ref TM 42625 89917. This also suggests historical issues with flooding.
- Local residents reported “jets of water” from the centre of road at the Blyburgate Junction with Peddars Lane. This has since been identified as a foul sewer chamber (Manhole ref 5901) after affected residents pointed out the chamber during a site visit. Further post-event repair works to the road and chamber support these findings. Sewage also reported in the back gardens, indicating private drainage connects to the foul sewer which was clearly surcharging. This also indicates that stormwater is getting into a system designed not to take it, illegal connections (private and/or highway) are the likely cause.
- Reports that 4x highway gullies in Ingate were completely blocked which meant no escape for rainfall and foul flooding. Gully grates were historically seized, so no maintenance had occurred before the event. Although these measures can be overwhelmed during high intensity storms anyway, but it appears they were blocked anyway.
- The flooding in Ingate Rd may have been exacerbated by the high-water levels (flood flows) in the town’s main open drain which was especially high. This may have caused the performance of the highway drainage to decrease due to surcharged outfalls or worse suffer from reverse flows.

2.12 Additional Information:

- Foul sewers reported to had flooded Grove Road also during the event.
- No road closures – moving cars created bow waves forcing floodwater out of the highway, exacerbating the flooding to private homes.

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- Residents reported rapid draw down of floodwater after the storm had stopped.
- No property level resilience have been employed.
- No emergency services were present.

3.0 Risk Management Authority with Relevant Flood Risk Function

- Anglian Water: Surface water drainage maintenance, regulator & asset owner
- Suffolk County Council: Public highway maintenance, land & asset owner
- Suffolk County Council: Lead Local Flood Authority

4.0 Recommendations:

- Homeowner(s) to add additional flood resilience measures to their properties i.e. property level resilience (PLR). LLFA may be able to help with this.
- Highway drainage to be surveyed to establish design standard and critical areas for maintenance. Although gullies have now been improved, the conveyance system to be checked for improvements.
- Capacity checks to be undertaken by Anglian Water on both foul and stormwater systems within Blyburgate, Ingate and Fredericks Rd. AW to investigate reducing pressures on the foul system especially the reduction of surface water ingress with other stakeholders (i.e. SCC Highways). Sealed lids could be another option however these would likely worsen pressure elsewhere, notably private lateral connections would be the next weak link and thus sealing lids is not recommended in this instance (although these are illegal connections).
- SCC Highways – to review policy on road closures. Residents, emergency services and highways to form effective lines of communication/alerts for when closures needed. Signs should be issued once flood water visible.
- SCC Highways to survey and investigate state of the highway drainage in Ingate/Fredericks Rd and which type of AW sewer this connects to, if any. Pending results of this, highway drainage to be improved accordingly, SuDS principles would be advantageous at this location that. Additional large double gullies should be installed to reduce blinding. Recommend raising drop kerb levels in front of effected properties.
- Temporary pumping systems could be given to residents to reduce water levels within Ingate or private properties as part of a PLR system. Alternatively we suggest that a flood action group is formed given the historical problems here, the group could be in charge of the pumps and deploy them when necessary.

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4.1 Recommended Actions:

| Action | Responsible Authority | Timescale for response | Latest Progress Update for Actions |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|---------------------------------------------------------|
| Investigate road drainage in affected area. Short term maintenance required. Long term, investigate possible improvements to system accordingly with AW | SCC Highways | 6 Months | Highways have changed 4x gully grates. Awaiting surveys |
| Advise residents of Property Level Resilience measures and funding opportunities. | SCC Floods | 3 months | |
| <p>Anglian Water to comment on capacity and investigate mitigate options to reduce pressures within public sewers in Beccles.</p> <p>Confirm ownership and/or responsibility of concrete lined drain through town centre. Sections are registered on DigDAT.</p> <p>Look for possible partnership schemes within AMP7. SCC Floods/SCC Highways to co-ordinate capital programmes.</p> | AW | 3 months | |