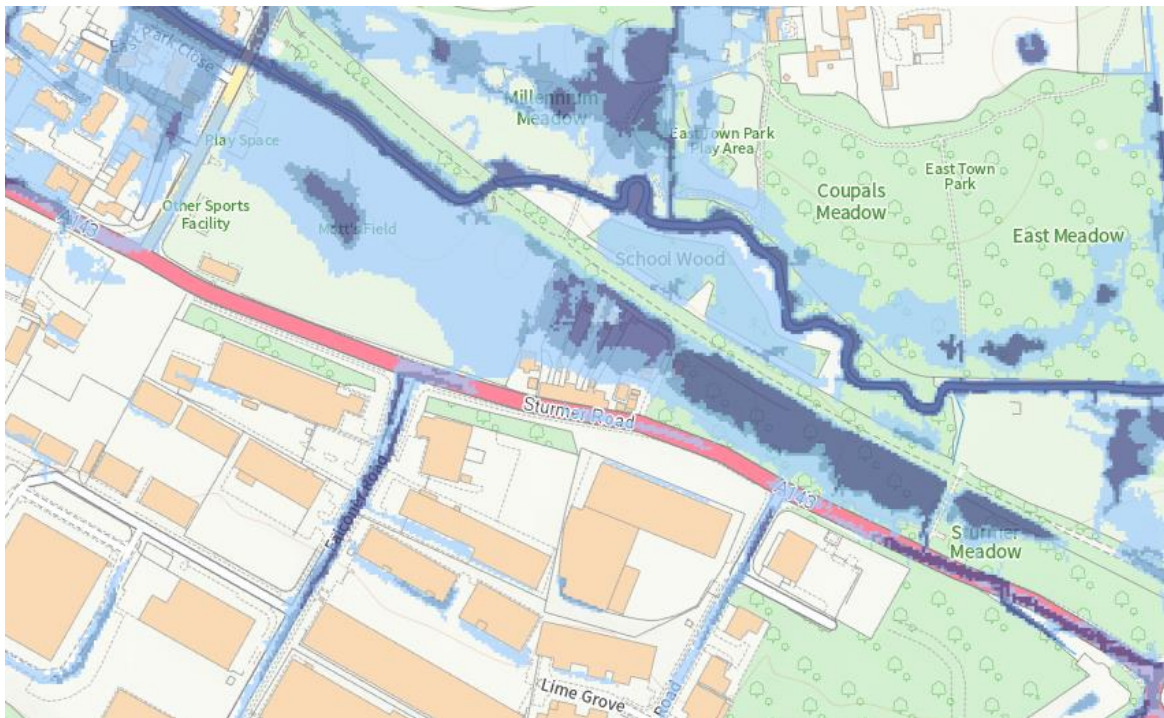


Section 19 Flood and Water Management Act 2010

Report Title: Sturmer Road, Haverhill

Report References:

CRNos 288982 & 329959



	Name	Date
Report Author	<i>H Purkis</i>	
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Checked by:	<i>S Curl</i>	<i>16/08/2021</i>
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Introduction

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 Sections 19 (1) & (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	

1. Location of flooding

An intense localised rainfall event occurred on 25.07.2021 in Haverhill. Nearby Environment Agency (EA) rain gauges at Wixoe & Steeple Bumpstead (see values in brackets) recorded that 14.4mm (45.4mm) fell within 5 hours from 15.15 to 20.00, with 5.0mm (13.4mm) falling in 15 minutes at its peak. To put this in context, the average July rainfall for Haverhill is 92.1mm.

The majority of Haverhill was impacted in some way, with flooding reported to Suffolk County Council (SCC) in Hazel Close, High Street, Harewood Terrace, Greenwood Close, Elm Close, Chantry Road & Withersfield Road. This triggered several Section 19 investigations, each based on a specific location.

This investigation focusses on the flood event that occurred at a series of properties north of Sturmer Road (A143), Haverhill. The postcode area is CO9 4BB. The location is shown in context with surrounding areas on the map extract below. The properties are located at a low point with higher ground to the south, east and west. Levels to the north fall away towards Stour Brook.

To the south, lies an industrial estate which comprises a large contributing area of impermeable surfacing, from which excess flows travel down Falconer Road, once the drainage in the highway has been overwhelmed. A large embankment lies between the properties' rear gardens and the river. This prevents the properties from being impacted by overtopping of the Stour Brook, but also prevents surface water flows from easily getting into the watercourse.

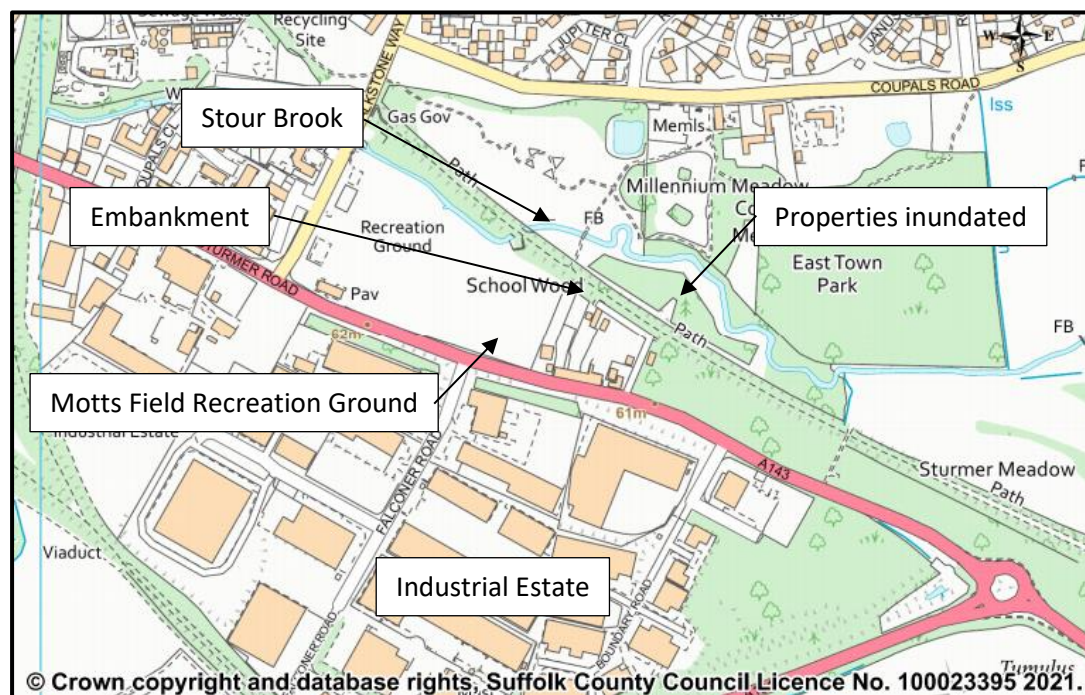


Figure 1 - Investigation Area Map

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2. Records of any historical flooding

Whilst the east of England is typically one of the driest parts of the country, summer rainfall events can be short and intense, leading to the drainage networks being overwhelmed and unable to cope with the volume of water.

Anecdotal evidence indicates that several of the properties in this area experience internal flooding once or twice annually during sudden and intense rainfall events. The most recent dates are August 2020 and July 2021.

Shown in Figure 2 below is a map extract of the recorded historical pluvial flood events as held by SCC. Please note that as all of the above events were not formally reported to SCC, they do not all appear on the following extract.

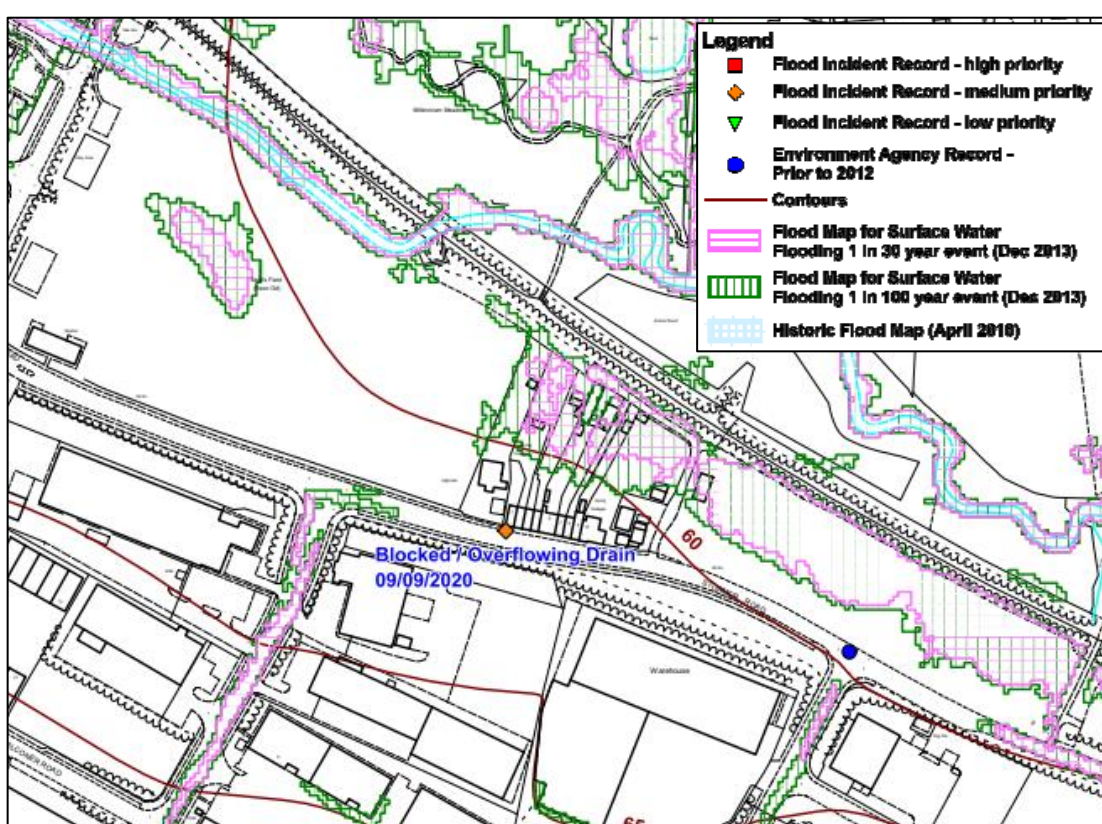


Figure 2 - Historical Pluvial Flood Incidents (to be updated once the 2021 events have been mapped)
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3. Effects of flood event

The intense nature of the rainfall resulted in a large volume of surface water flowing down Falconer Road and Sturmer Road, accumulating in the low spot immediately in front of the properties that were worst affected. The highway drainage was overwhelmed and surface water accumulated to a depth of approximately 400-500mm in places.

The road was not closed immediately and thus cars driving through the flood waters created a wash that further impacted the properties as depths and velocities increased temporarily as the cars passed.

Water entered at least three of the properties through the front doors. Internal flooding only reached a depth of 15-20mm due to the residents acting quickly. The flood event occurred on a Sunday, so the majority of the occupants were at home and on hand to mitigate the effects, sweeping out the water and mopping it up with towels etc. An interruption to power supply was reported to have been experienced in one of the properties.

Externally, the water is reported to have damaged the footings of at least one of the properties as surface water flows travelled down the side of the property in a northerly direction towards the embankment and Stour Brook beyond.

The depth of flooding in the road resulted in bins 'floating away', cars being stranded and damage to parked vehicles with a bumper being removed by the flows in one instance.

Surface water flows also accumulated within Motts Field Recreation Ground to the west, which flowed eastwards through the rear gardens, funnelled between the embankment and the properties. Whilst this is not likely to have contributed to the internal flooding, it caused damage to outbuildings, garden areas and vehicles.

Several of the properties are reported to be served by septic tanks (with unsealed manhole covers) rather than discharging to the Anglian Water foul sewer network. This is likely to be the case for all the properties as the nearest foul sewer is a pumped rising main. On the previous occasion (August 2020) the floodwaters entered the septic tanks and raw sewage mixed with the surface water, increasing the risk to health as a result of the event.

It should be noted that an adjacent property is situated in very similar circumstances, however as surface water (pluvial) and fluvial flooding were considered at the planning, design and construction stages, it experienced no internal flooding at all. Access thresholds, air bricks, windows and letter boxes etc are placed at or above the maximum flood level and it is set back from the road resulting in the floodwaters residing temporarily within garden areas before dissipating.

Anecdotal evidence indicates water began to recede after approximately 2-3 hour and within 24 hours had almost completely drained away.

4. Predicted Flood Risk

The national government indicative "flood risk for planning" map identifies that neither tidal (sea) nor reservoir flooding represent a significant risk to this location. Pluvial (surface water) flooding however is recorded to represent a

Medium to High risk (each year this location has a risk of flooding of between 1 - 3.3%) in Sturmer Road and within the rear gardens of the properties.

An extract of the pluvial flood mapping is shown below for reference. This demonstrates the direction and speed of flow during the worst-case scenario. Dark blue is flows over 0.25m/s with light blue denoting speeds of less than 0.25m/s. The small black arrows denote direction of flow.

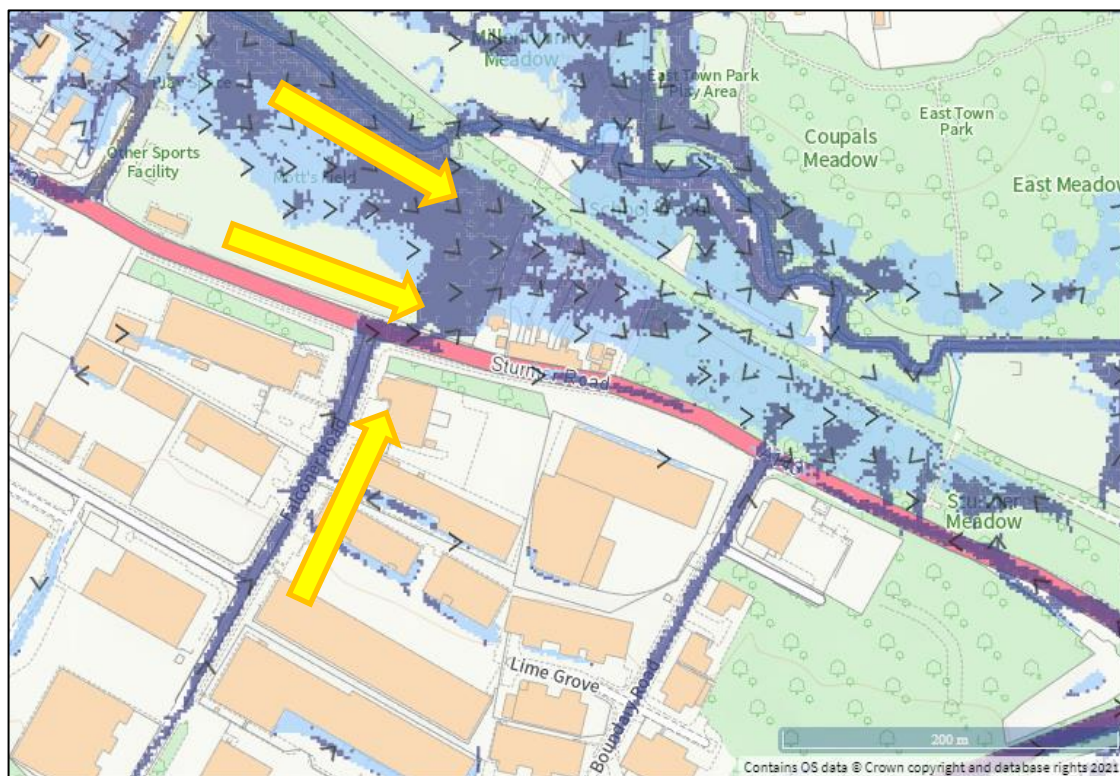


Figure 3 - Surface water flood risk: water velocity in low-risk scenario (main flow paths denoted by yellow arrows)
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Fluvial (river flooding) is also identified to be a factor in the flood risk at this location. Whilst the properties themselves are located in Flood Zone 1 (less than 0.1% chance of flooding in any given year), the playing field to the west and the rear gardens are largely located in Flood Zone 2 (between 1% and 0.1% chance of flooding in any given year). See Figure 4 overleaf.

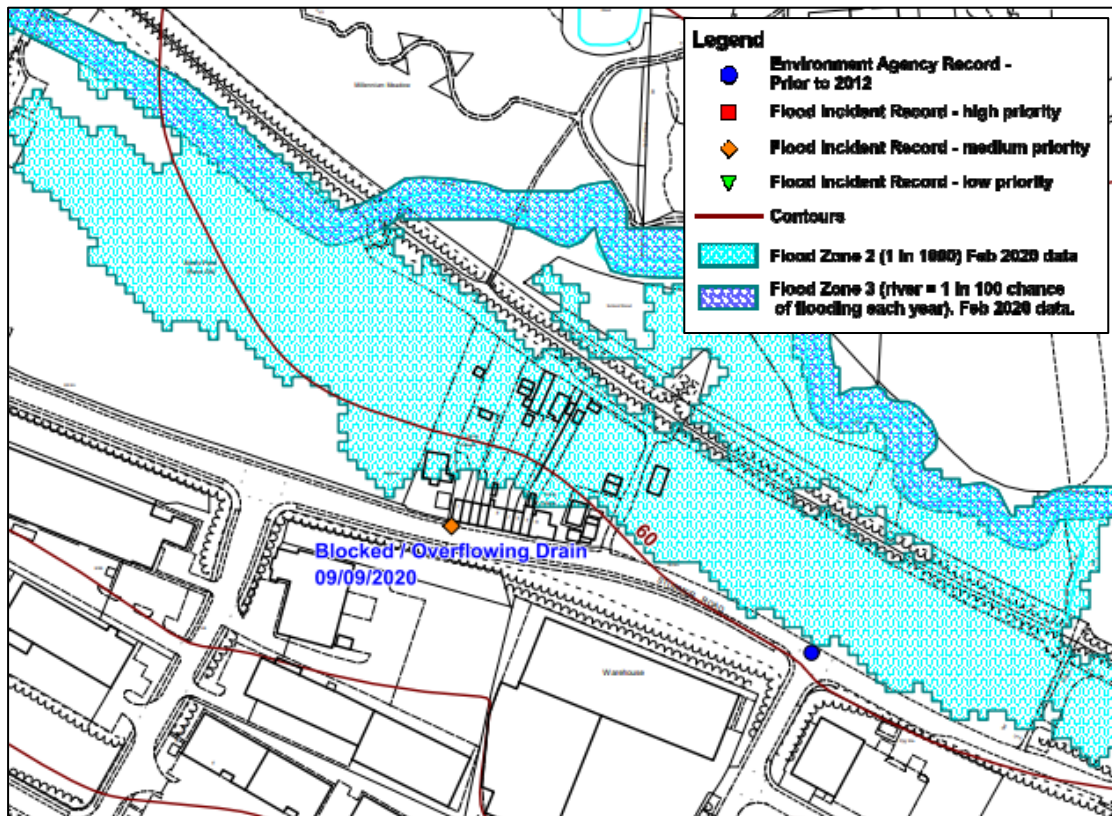


Figure 4 – Fluvial Flood Risk Mapping & Historical Pluvial Flood Incidents
 (to be updated once the 2021 events have been mapped)

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Whilst the internal flooding experienced within the properties was not directly attributable to fluvial flooding, it inundated the rear gardens and may have reduced the available capacity within this area to accommodate the surface water flows running off the highway.

Haverhill is recorded within the West Suffolk Strategic Flood Risk Assessment (SFRA) 2021 as having limited potential for groundwater flooding to occur at the surface. This suggests groundwater flooding is unlikely to have contributed to this flood event.

5. Flooding Sources & Likely causes:

- **Significant rainfall:** one cause of the flooding was the intense nature of the rainfall. 45.4mm (half a month's rainfall) fell in less than 5 hours which overwhelmed the drainage systems which resulted in large volumes of surface water accumulating in the highway.
- **Fluvial flooding from the Stour Brook:** accumulations of floodwaters in the recreation ground to the west flowed through rear gardens adding to the flood volumes coming off Sturmer Road.
- **Topography:** the properties that flooded are located at a low point with a relatively large impermeable catchment to the west and south. The presence of the high ground/embankment to the north-east inhibits the movement of overland flows into the river away from people and properties.
- **Overwhelmed gullies/unknown highway drainage:** the intensity of the rainfall is likely to be greater than the capacity of the highway gullies which capture runoff from the road and pavements. Further information is required regarding the highway drainage network as whilst the gullies may have been recently checked and cleansed, there are no records of where these gullies discharge to or how surface water captured by these features is managed (e.g. directed to the river or to soakaways).
- **Unknown capacity/condition of the Anglian Water asset serving the industrial estate to the south:** any surcharge from this surface water sewer would contribute to flows in Sturmer Road.
- **Private septic tanks:** the lack of mains foul drainage serving the properties resulted in sewerage mixing with the flood waters at least one occasion, increasing the health hazard of the flood event.
- **Absence of property level flood resilience:** it must be noted that resilience measures may have prevented ingress of water up to a depth of 600mm however the prevention of water ingress at depths greater than 600mm is likely to have structurally damaged the properties due to differential pressure.
- **Floor level power points:** Floor level power points and transformers led to short term loss of power. This complicated the response to the flood event.

6. Photos of flooding



Depth of flooding in rear gardens of the properties



Depth of flooding externally, water reported to have reached lower edge of the letter box



Motts Field (looking north), at point where Stour Brook is culverted under embankment and excess flows combined with surface water overland flows travel eastwards through rear gardens

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

Risk Management Authority	Relevant Flood Risk Function(s)
Suffolk County Council - SCC	Lead Local Flood Authority, Highways Authority & Asset Owner
West Suffolk Council - WSC	Local Planning Authority & Asset Owner
Anglian Water - AW	Asset Owner
Environment Agency - EA	Asset Owner
Non Risk Management Authority	Relevant Flood Risk Function(s)
Property Owners/Occupants	N/A

8. LLFA Recommended Action(s):

Action	Risk Management Authority	Timescale for response	Latest Progress Update for Actions
Reactive Cleanse of highway drainage	SCC - HA	1 month	Pending
Investigate highway drainage network in Sturmer Road to establish if sufficient capacity and acceptable condition. Instigate mitigation measures if appropriate	SCC - HA	January 2022	Visual Inspection being undertaken week commencing 4 th Oct 2021
Investigate surface water sewer network in Falconer Road to establish if sufficient capacity and acceptable condition. Instigate mitigation measures if appropriate	Anglian Water	January 2022	Pending
Review requirement for Flood Re & Property Flood Level Resilience measures with support from SCC LLFA & National Flood Forum	Property Owners	September/ October 2021	Pending

Raise power points to reduce likelihood of further power outages/issues	Property Owners	September/ October 2021	Pending
Consider creating a low bund/embankment along eastern edge of recreation ground to temporarily hold accumulations of floodwater to avoid though flow into rear gardens	West Suffolk Council	May 2022	Pending
Under duties as riparian owner, ensure maintenance of Stour Brook is up to date and watercourse is flowing well with no blockages etc	West Suffolk Council in conjunction with the EA	January 2022	Pending
Install replace septic tank covers with secure lids which will not become displaced during a flood event	Property Owners	September/ October 2021	Pending

9. Reviews

This report will be reviewed and updated every 3 months until actions are marked as complete

Reviewer	Date of Review

10. 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.

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.

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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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