

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

Report Title:

Beccles Quay (Fen Lane & Bridge Street)
 & Beccles Lido (Puddingmoor), Beccles

Report Reference:

FW2020-2450

	Name	Date
Lead Officer:	<i>Hannah Purkis</i>	
Created by:	<i>Hannah Purkis</i>	<i>22/04/2020</i>
Checked by:	<i>Simon Curl</i>	<i>04/05/2021</i>
RMA Review:	<i>Environment Agency East Suffolk District Council Waveney Norse Water Management Alliance SCC Highways Authority Beccles Town Council</i>	<i>05/05/2021</i>
Approved by:	<i>Matt Hullis</i>	<i>13/08/2021</i>
Date Published:		<i>20/08/2021</i>

Reviewer:	Date of Review:
<i>H Purkis</i>	<i>December 2021</i>

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: FW2020-2450

2.1 Location: Beccles Quay (Fen Lane & Bridge Street) & Beccles Lido, Beccles

2.2 Flood Event Date: Multiple, reoccurring events during 24th – 29th December 2020 & 5th April 2021

2.3 Reported to SCC Date: December 2020

2.4 Investigation Commencement Date: April 2021

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?	-
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	-
Critical infrastructure was affected by flooding	-
There is ambiguity surrounding the source or responsibility of a flood incident	✓

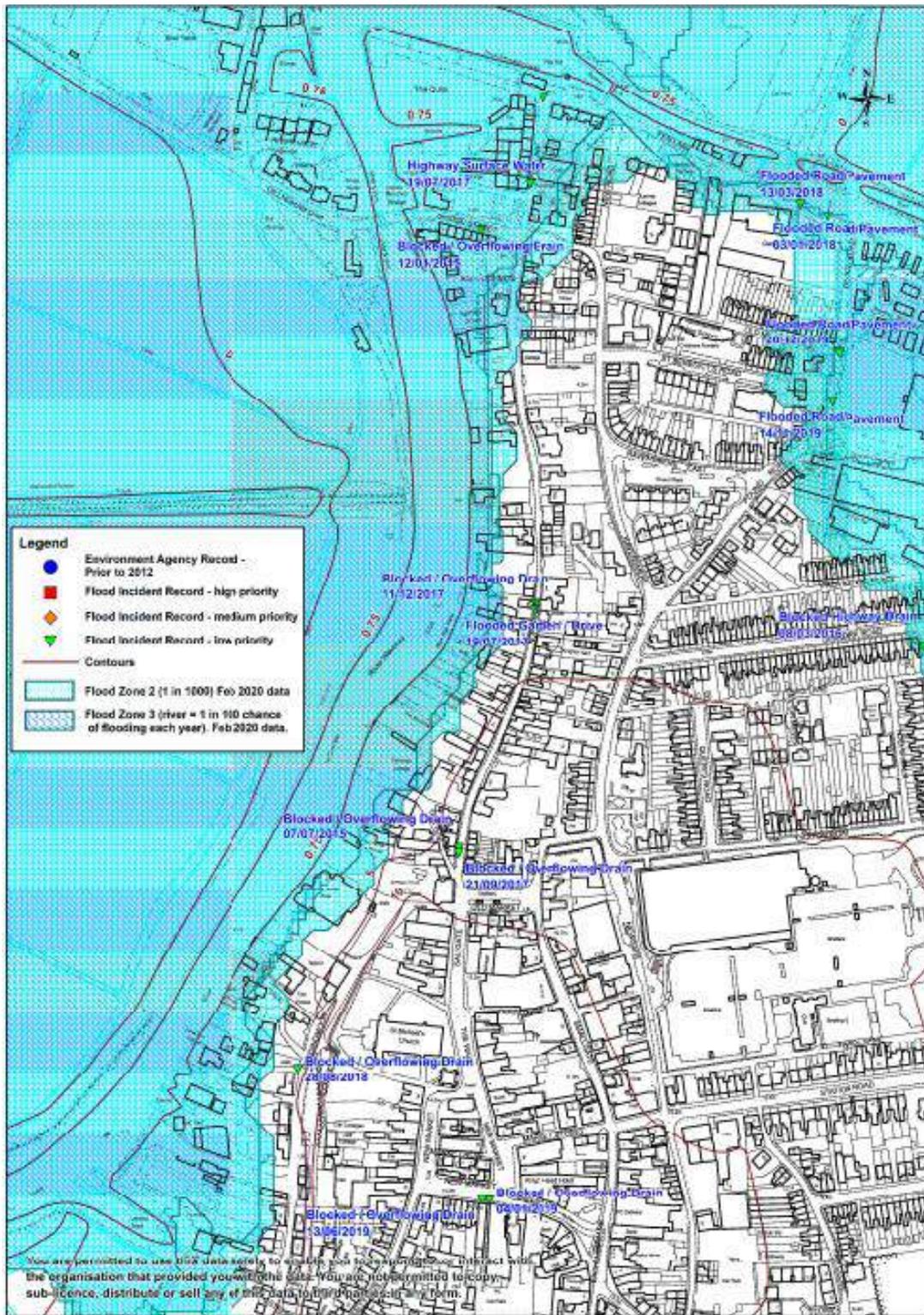


Figure 2 - Fluvial & tidal flood risk map

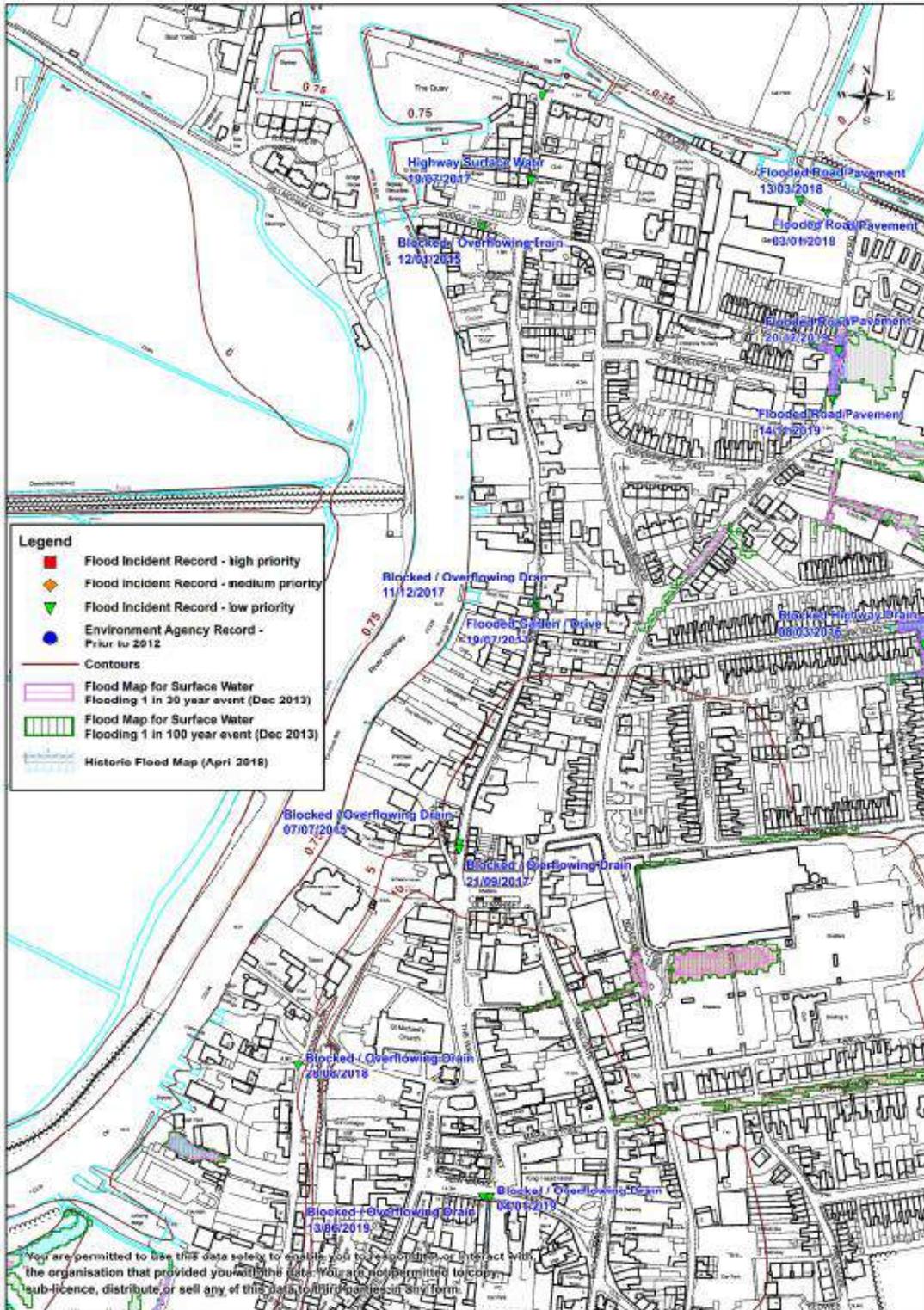


Figure 3 - Pluvial flood risk map

- 2.6 OS Grid References:** TM 42343 91089 (Fen Lane)
TM 41923 90413 (Beccles Lido)

2.7 Extent of flooding:

The majority of the northern part of Beccles, particularly the area between the River Waveney and the Beccles Town Drain (non-main river which drains into the boat dyke along Fen Lane), was impacted by floodwaters from multiple sources in the later part of December 2020.

Internal flooding was reported within Beccles at The Maltings on Fen Lane, Bridge Street, the Quayside, the river frontage along the Northgate Road area and the Lido at Puddingmoor.

Highway flooding was reported along the river frontage, on Fen Lane & Bridge Street.

The Environment Agency (EA) have produced a document (Beccles Winter Flooding Briefing) summarising the flood event and introducing the Beccles Flood Risk Management Project. This document has been attached to this report as an appendix, see Appendix A.

2.8 Effect of flooding:

Beccles Lido and several other commercial/industrial businesses had to close, albeit many businesses were closed over the Christmas period anyway, so this may have limited the immediate socio-economic extent of the damages.

Internal flooding was experienced within at least 8 properties in Beccles, with approximately 21 properties reported to have been impacted in some form.

The high tide levels experienced caused tide locking of the river, preventing fluvial flows from discharging to the sea, which raised river levels further. The 3 highest recorded river levels during this time coincided with high tides.

The high river levels in the River Waveney in turn resulted in the flap valves (automatic) and penstocks (manual) being closed, preventing surface water runoff from the highways and surrounding areas discharging into the river.

Further to the flap valves and penstocks being closed, one of the penstock valves (privately owned) is reported to have been infilled/no longer functional. This is being investigated further as one of the recommended actions. See the table in section 4.0.

Some of the main highway routes within this part of Beccles, were impassable for a period of time with floodwaters reaching approximately 300mm in depth in places.

A private wall was damaged by the recent flooding with a portion of it failing and allowing a flow of flood water from the river into the Beccles Lido area. See Figure 4 overleaf for the location and extent of the damaged area.

2.9 History:

Beccles lies on the banks of the River Waveney, at the point where it is still tidally influenced and thus at risk of flooding from this source along with other sources which include fluvial (river flooding), pluvial (surface water flooding), groundwater and sewer flooding.

Whilst the EA hold detailed records for fluvial and/or tidal flood events, SCC holds records for pluvial/surface water/highway flood events. SCC's records indicate multiple surface water flood events have occurred each year in the Puddingmore and Fen Lane areas of Beccles dating back to prior to 2015 (when the current record system was established).

The fluvial/tidal flood defences in Beccles mainly comprise a brick flood defence wall and wooden flood boards which are installed at the start of autumn/winter when flooding is forecast and left in situ for the season. The flood defence wall, is for the most part, privately owned and ties into high ground at either end. This is further demonstrated in the plans included in Appendix B of this report.

This area and assets are now owned by Beccles Fenland Charitable Trust (BFCT) as of a few years ago. Beccles Town Council (BTC) are the sole trustee of the Beccles Fenland Charitable Trust. Waveney Norse install the flood boards and sand bags and operate the penstocks on behalf of BTC.

The water levels in the surrounding low-lying land areas are artificially managed by both the BFCT pump to the north and the Waveney, Lower Yare and Lothingland Internal Drainage Board (IDB) Barsham pump to the west of Beccles which lift water into the Main River network.



Figure 4 – Location and extent of flood wall breach (Environment Agency)

2.10 Flooding Source:

Multiple sources have been identified, which include accumulation of surface water (pluvial), fluvial and tidal flooding, highway drains backing up and rising shallow groundwater levels.

2.11 Possible Causes & Contributing Factors:

Heavy rainfall: Heavy and prolonged rainfall event (Storm Bella) coinciding with tide-locking of the river due to high tide levels prevented the river discharging to the coast as it would in normal conditions.

High Tides: The resulting higher than normal river levels prevented gravity discharge of surface water to the river. The resulting backing up of water through the various urban water management systems issued to the surface and contributed to the flooding witnessed.

High River Levels: The River Waveney was in flood (flood alert/warning details below) conveying significantly higher than usual flood flows. This resulted in

seepage through the flood boards and overtopping of flood defence earth embankments flooding onto low-lying areas behind the flood defence wall.

- At 18:08 on 24 December the EA issued a flood alert (be alert, stay vigilant and make early preparations) for the tidal River Waveney from Ellingham to Breydon Water,
- At 16:32 on 26 December the EA issued two flood warnings (flooding is expected, take action to protect yourself and your property) for the Tidal River Waveney from Ellingham to Belton, and for Isolated Properties along the River Waveney.

Blocked/Surcharging Highway Drainage: Surface water runoff which couldn't discharge to the river, backed up through the highways drains and gullies onto Fen Lane and Bridge Street.

Missing/Malfunctioning Flap Valve: Mechanical failure of any of the various non return valves, penstocks, dam board systems could allow river water flows to back up and/or surface not being able to drain to the river due to closed penstocks or seized flap valves.

It has been reported highway drainage non-return outfall flap valves may be damaged and/or missing which may have contributed to the flooding. This is being investigated further as one of the recommended actions. See the table in section 4.0.

Groundwater: Shallow groundwater entered properties and low-lying areas either rising directly through the ground or via underground service ducting.

2.12 Additional Information:

The EA have initiated a new project investigating the risk of flooding from the River Waveney to people and property in Beccles. The project is known as the Beccles Flood Risk Management Project. Further details are included in Appendix A.

A group of flood risk management partners have been established to co-ordinate the causes of future flooding in Beccles. Future mitigation options will then be subject to the findings of the flood risk management partners, design, costs and available funding.

The ordinary watercourse network is complex and significant, the pumping station to the north pumps out exceedance flows from the Anglian Water Services (AWS) surface water sewer. When the sewer exceeds capacity it overflows into the arterial watercourse managed by the BFCT. The system manages a significant volume of water, which is increased by main river flooding.

As of 1st April 2020, the Waveney, Lower Yare and Lothingland IDB has joined the Water Management Alliance (WMA). The WMA are formed of 6 No. individual IDBs. The WMA Group have been asked by the BFCT to undertake a condition assessment of their various assets, formate long term investment needs and program routine maintenace of their assets.

3.0 Risk Management Authority with Relevant Flood Risk Function

Environment Agency (EA) – Strategic overview of the management of all sources of flooding & coastal erosion with permissive powers to the risk of flooding from rivers and the sea.

East Suffolk Council & their contractor Waveney Norse (ESC/WN) – Local Authority - Landowner & Asset Owner & Manager

Waveney, Lower Yare & Lothingland Internal Drainage Board (IDB): Consenting authority for regulating the efficient working of the ordinary watercourse drainage systems within the IDB district.

SCC Highways Authority (SCC HA)– Highways & Highways Drainage Assets

SCC Lead Local Flood Authority (SCC LLFA) – Pluvial (surface water) Flooding

Beccles Town Council (BTC) – Landowner & Asset Owners

Beccles Fenland Charitable Trust (BFCT) – Management of assets on behalf of BTC

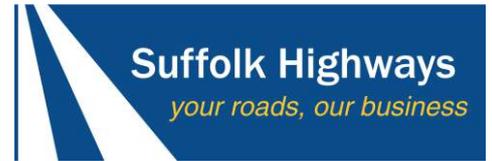
4.0 Recommendations:

Action	Responsible Authority	Timescale for response	Latest Progress Update for Actions
Survey/assess and repair leaking penstocks if required. Investigate potentially blocked/infilled private penstock	BTC, ESC & WN	Ongoing	Survey commissioned April 2021, awaiting report. Requested update Oct 2021, awaiting update.
Undertake wider baseline survey of watercourse assets and determine condition, ownership & responsibility	WMA/IDB	Ongoing	Ongoing in conjunction with WN/ESC, spatial plan updated on receipt of survey data.
Agree responsibility and procedure to deploy temporary pumps at Fen Lane	BTC in conjunction with ESC/WMA/IDB	1 – 3 months	East Suffolk Council taking the lead. WMA/IDB provided prices for consideration.

Survey & review highway drainage assets	ESDC to undertake works in conjunction with SCC HA	1 – 3 months	Jetting and CCTV surveys commissioned of highway assets to be completed Dec '21/Jan '22.
Produce a spatial plan of assets ownership, roles & responsibilities, for inclusion in S19 and future reference	All RMAs	Ongoing	Ongoing, with additional information added on receipt of survey data
Individual property owners to review resilience of buildings & prevent water ingress in the future	Private land/property owners with advice/support from SCC LLFA	1 – 3 months	Pending
Engage with and support the existing flood group to improve resilience – produce a community flyer	EA Flood Resilience team	3 – 6 months	EA have engaged with BTC who will lead on this.
Draft an emergency response plan	District Emergency Planning Officer	3 – 6 months	Emergency flood plan produced and circulated.
Review long term management of flood risk in Beccles	EA / Private Landowners / BTC	24+ months	Long term project underway to investigate number of people and properties at risk. Initial assessment report completed summarising ways to improve flood risk management in Beccles.
Permanent surface water pump as part of Beccles Flood Risk Management Project if deemed necessary following flood risk partners discussions	To Be Confirmed: WMA / IDB in conjunction with EA	12–24 months	Recommendation removed following initial assessment report completed by EA. Other flood risk management actions are considered more effective.

*** Update outside of RMA actions listed above – Broads Authority have updated planning policy in the Beccles to identify the area particularly sensitive to flooding and ensure this gets acknowledged and taken into account in any future minor or major planning applications that may come forward.**

Appendix B – Environment Agency Flood Risk Assets (pending inclusion of highways drainage assets)



Beccles Flood Risk Management

December 2021

What are we telling you about?

This briefing is to update you on what we have been doing since the flooding that took place in Beccles in December 2020.

The Environment Agency are leading and coordinating input from partner organisations who are involved in flood risk management in Beccles. This includes Suffolk County Council (as the Lead Local Flood Authority), Suffolk Highways, East Suffolk Council, Waveney Norse, Anglian Water and Beccles Town Council.

What have we been doing?

The Environment Agency last updated you with the 'Beccles Winter Flooding Briefing' which was shared with the community in June 2021.

The December flood event highlighted issues with surface water drainage when river levels are high and possible groundwater flooding in addition to flooding from the River Waveney. Given the complexity of the flooding in Beccles we have been working with partner organisations to understand and investigate what happened.

Through this work we identified several immediate actions that could be undertaken to reduce the chance of flooding in the immediate future. We are also looking ahead for a longer-term option. The work we have undertaken is explained in more detail below.

Flood Investigation Report

Suffolk County Council undertook a flood investigation report as part of their duties under Section 19 of the Flood and Water Management Act 2010. The purpose of this report is to establish the causes of flooding and make recommendations for future improvements to managing and responding to flooding in Beccles. The final report has been published on the Suffolk County Council website.

The flood investigation report can be viewed here: <https://www.suffolk.gov.uk/assets/Roads-and-transport/Flooding-and-drainage/Section-19s/Section-19-Report-Beccles-Quay-Beccles-Lido.pdf>



Flooding at Fen Lane and the Quay in Beccles, December 2020. Photo credit Paul Rudland <https://alldrone.uk/>.

Drainage Investigations and Surveys

With support from the Environment Agency, Waveney Norse and Suffolk Highways have undertaken detailed surveys of the drainage system and assets in the area of Fen Lane. This involved multiple site visits to inspect the penstock chambers at high and low tides. Waveney Norse operate the penstocks and install the flood boards on behalf of Beccles Town Council and Suffolk Highways are responsible for the road drains.



Inspection of the surface water drainage penstock at Fen Lane, Beccles in July 2021.

The survey indicated that the highways surface water drains extend from Beccles Quay onto Fen Lane and Bridge Street. Suffolk Highways will be undertaking further investigations on Bridge Street in due course.

The penstocks on Fen Lane and at the rear of the former Loaves and Fishes public house have been checked and cleaned to ensure they will effectively shut off the drainage system and prevent a backflow of river water. Associated flap valves at the quay have also been checked and some further maintenance is planned.

Temporary Pump

East Suffolk Council and Waveney Norse with support from the Environment Agency have set up a procedure for the deployment of a

temporary pump to help alleviate flooding at Fen Lane should it happen again. The Suffolk Joint Emergency Planning Unit has also written a flood plan for Beccles.

Flood Warning Service

To improve the accuracy of the flood warnings in Beccles the Environment Agency are continuing to review the thresholds for our Flood Warning System based on information gathered during the December 2020 event.

We understand that the flood alerts and warnings issued during the December 2020 event were received after the flooding had started in some locations. This happened because flooding occurred from multiple sources. The Environment Agency's flood warning system can only warn for flooding from the River Waveney. We cannot provide a warning service for surface water flooding as it is extremely difficult to predict precisely where it will happen as it is dependent on a number of factors including topography, geology, rainfall amount, soil moisture conditions and the local drainage network.

Beccles Flood Risk Management Project

As we mentioned in the briefing in June the Environment Agency are in the early stages of a long-term project to investigate ways to reduce the risk of flooding from the River Waveney to a number of properties. The Environment Agency previously undertook an "Initial Assessment" of flood risk in Beccles to better understand the risk and consider what could be done to help reduce flood risk. This report came up with a number of potential ways to improve the management of flood risk in Beccles.

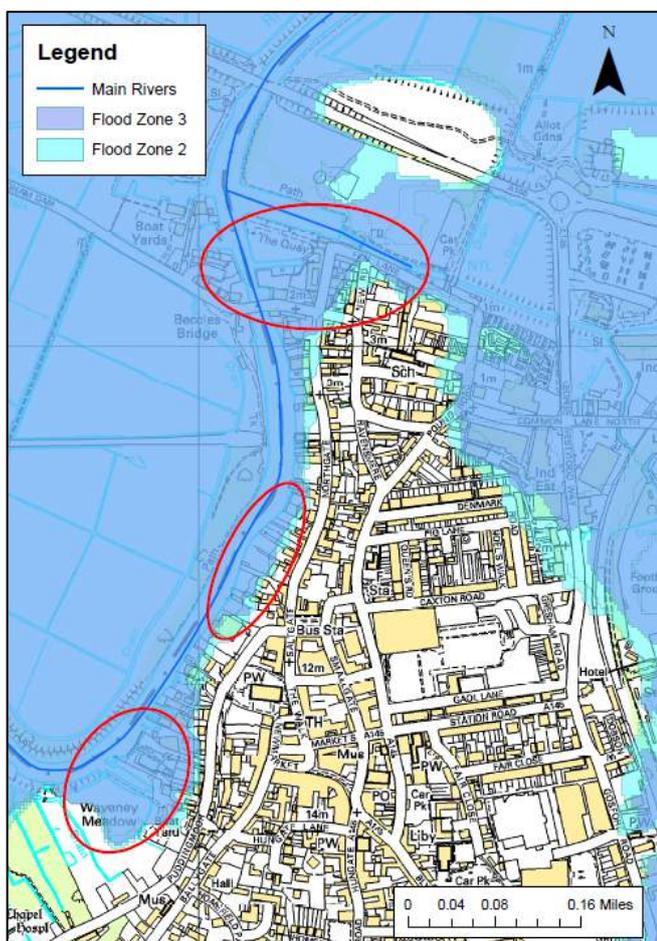


Flood wall and flood boards on Fen Lane, Beccles.

Several of the options identified as part of the Initial Assessment work were found to be viable. The most favourable option included maintaining the existing flood wall but replacing the flood boards with flood gates. Individual Property Flood Resilience (PFR) measures such as waterproof external doors to exclude flood water, would also be required for 5 properties that do not benefit from the current flood defences.

This is expected to be completed in the summer of 2022. We will be looking to share our findings with the community and would welcome your views on the proposed options. We will be in touch with how you can view and provide comments in due course. If you have any questions in the meantime, please get in touch using the contact details at the end of this briefing.

We are in the process of investigating and developing capital projects to manage flood risk in a number of other communities that were affected by flooding in December 2020, including Bungay.



Locations where 22 properties were affected by the December 2020 flood event in Beccles. This figure includes all sources of flooding and both internal and external flooding of residential and commercial properties.

Working with our flood risk consultants, Jacobs, we are developing this work to produce a business case and a long list of options to manage flood risk from all sources of flooding in Beccles (including surface water), therefore the options may change. To inform the project we will also be undertaking a number of surveys and assessments of the existing defences in Beccles in order to understand their current condition.

Community Engagement

As already mentioned in this fact sheet, we have set up a procedure for the deployment of a temporary pump to help alleviate flooding at Fen Lane. To make the best use of this asset and ensure it is deployed at the right time we need to work closely with the community.

We would welcome input from members of the community. This could take the form of a volunteer flood warden role or as part of a flood group. Any new flood group or flood wardens would link into the community emergency planning group already in place which is managed by Beccles Town Council.

If you are interested in being a flood warden or part of a flood group in Beccles please email Tina Starling in the Flood Resilience Team at the Environment Agency: tina.starling@environment-agency.gov.uk.

Contact

For further questions or comments please contact:

Charlotte La Vedrine

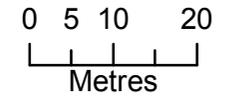
Environment Agency
Flood & Coastal Risk Management Advisor

Telephone: 020 302 58359
Email: charlotte.lavedrine@environment-agency.gov.uk

Flood Risk Assets at Beccles Lido, Puddingmoor, Beccles



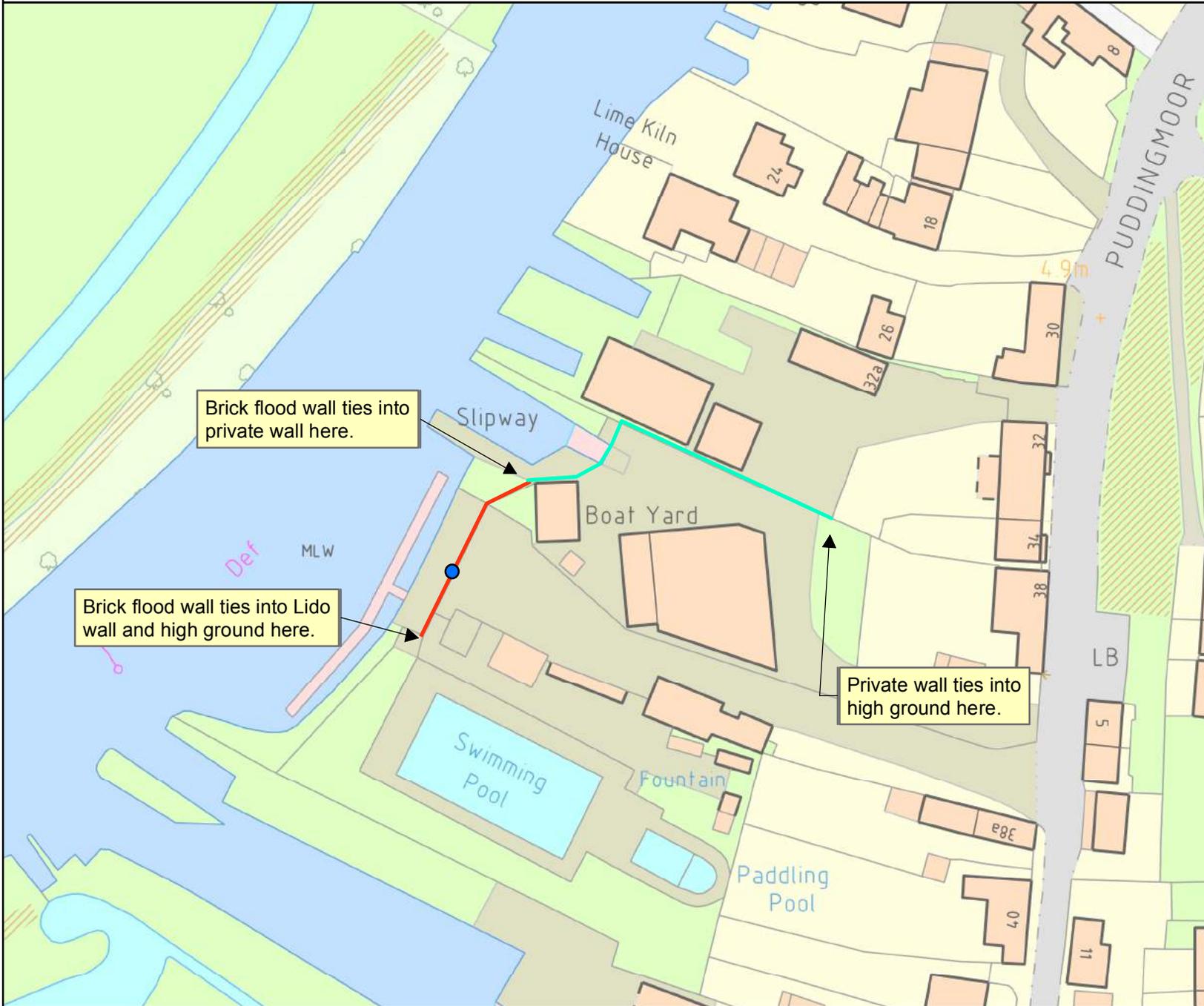
Environment Agency
Iceni House
Cobham Road
Ipswich
Suffolk
IP3 9JD



1:900

Legend

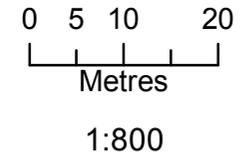
- Flood wall
- Flood Gate
- Private wall



Flood Risk Assets (excluding main highways drains) on Fen Lane and Bridge Street, Beccles



Environment Agency
Iceni House
Cobham Road
Ipswich
Suffolk
IP3 9JD



Legend

- Flood wall
- Flood_Boards
- Penstocks
- Surface Water Drain
- Highways drain

