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Planning | Design | Project Management

## FLOOD RISK ASSESSMENT

### Proposed Alterations

**At:**

**8 – 10 Wide Bargate**

**Boston**

**Lincolnshire**

**PE21 6RF**

**Job Number:**

**B/3499**

**December 2020**

Architectural Consultants




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## Proposed Alterations at 8 – 10 Wide Bargate, Boston

<b>Date:</b>	December 2020
<b>Project Number:</b>	B/3499
<b>Prepared By:</b>	<b>Neil Dowlman MCIAT, MCABE</b> Managing Director Chartered Architectural Technologist <b>Chartered Building Engineer</b>
<b>Checked and Approved By:</b>	
<b>Revisions:</b>	-

## **1.0 Site Location**

The National Grid Reference for the centre of the site is 532861E 344308N. This location relates to all references made in this FRA to the site or site's.

The site is a commercial property located within the town centre of Boston, approximately 100m to the east of St Botolph's Church. The front access to the building faces directly onto the busy shopping street of Wide Bargate, immediately opposite the recently built Pescod Square Shopping Centre.

The site lies within a High Risk flood zone, zone 3.

## **2.0 Site Description**

The site covers 175m<sup>2</sup> in total, is segregated into two compact elongated units and both are currently being used for commercial/retail purposes (Oxfam and TUI).

There are three main sections to the building. The southern most (front facing) section of the building has 3 storeys. The middle section of the building has 2 storeys (currently used as stairwell access to the upper floors). The northern most section is ground floor area only that extends to all site boundaries indicated by means of a flat roof that is currently used as a means of fire escape for the premises.

To the west of the building there is a public alleyway that runs north along the entire west elevation leading onto Red Lion St via a car park at the rear of the site.

There are a mixture of mid 18<sup>th</sup> to 20<sup>th</sup> century buildings surrounding the site, including the Post Office on the corner of Wide Bargate and Park Gate. The majority of the surrounding buildings remain commercial and have been at the heart of Boston's town centre for many years.

## **3.0 Site & Surrounding Topography**

Using the points indicated on the 1:1250 O.S. Plan (Map 3) this proves that the ground floor outlined area of the site is above the lowest level of 4.0m O.D.N. (indicated on the O.S. Plan on Red Lion Street/New Street).

We estimate the centre of the site to be between 4.95m O.D.N. and 5.05m O.D.N. at ground floor level, and 7.80m O.D.N. at first floor living accommodation floor level.

There would appear to be a fall in the gradient of the site area in a northerly direction.

## **4.0 The Proposal**

The proposal is to provide a first and second floor extension to house a staircase to serve first and second floor flats. The creation of first and second floor flats would be developed under permitted development including the connection of the existing ground floor units to act as one commercial unit by means of removal of ground floor walls.

## **5.0 Potential Flood Sources & Defence Details**

The site is situated within a passive flood plain, defined by CIRIA as "... an area of the natural flood plain that is not now subject to frequent flooding due to the existence of flood alleviation measures." (CIRIA 2004)

The proposed site is potentially at risk, to a greater or lesser degree, from failure of any of the identified flood alleviation measures in the area. The defences come in the form of 'hard' floodwalls and raised embankments lining the potential flood sources.

#### ***Tidal Waters – The Haven***

The tidal stretch of The Haven is approximately 1.35km to the South of the site.

The defences along the Haven are generally constructed to a height of 6.05m O.D.N., which is sufficient to protect against a predicted 1 in 200 year flood event. Clearly if tidal surges caused there to be a significant rise in high tide level above this there would be some overtopping for a period of time until the tide levels dropped. However given the distance and obstacles between the proposed site and The Haven, I would suggest that the risk at the site would be minimal, if at all, from this source.

#### ***Tidal Waters – River Witham***

The River Witham is situated approximately 275m to the South West of the site.

Information from the Environment Agency indicates that the defences upstream from Grand Sluice are satisfactory and provide protection to above the 1 in 100 year flood level. In general, the defences along the Witham are between 4.0m O.D.N. and 5.0m O.D.N. and levels of water within the River are controlled through Grand Sluice meaning that high water levels, which result in overtopping, are likely only to be of limited duration.

#### ***Fluvial Waters – The Maud Foster***

The Maud Foster is situated approximately 365m East of the site.

The Maud Foster, Cowbridge and Hobhole Drains are all part of an interlinked drainage system that is jointly maintained by the Environmental Agency and the Black Sluice Internal Drainage Board. There are sluices with pumps controlling the outfall of all of these drains into the Haven. Water levels in these drains are managed by keeping water at a safe level by pumping into the tidal watercourses or by returning water upstream as appropriate. This system is in good order and we see no reason to doubt its performance even when subjected to peak flow conditions.

### ***6.0 Climate Change***

The effects of climate change, namely a rise in sea levels and/or an increase in rainfall intensity during storms, could also lead to increased flooding from surface water in the area overtopping existing defences.

It is estimated that the current 1 in 200 year flood level at 6.05m O.D.N. will increase to 6.35m O.D.N. by the year 2055 as a result of climate change. Clearly this would overtop the current 'hard' defences along The Haven but would only result in a shallow rush of water in the immediate area beyond the defences.

It is estimated that there could be up to a 20% increase in flow in the River Witham by the year 2055, however the width and configuration of the river is such that there is unlikely to be a significant increase in the frequency of flooding.

We have no reason to doubt such organisations, (the Environment Agency and Internal Drainage Board) will continue to monitor, maintain and improve the existing drainage network to prevent an increase in the occurrence of flooding in response to these predicted effects of climate change.

## **7.0 The Risks**

Clearly if tidal surges cause there to be a significant rise in high tide level above the existing flood defence levels along The Haven there would be some overtopping or potentially a breach. However given the distance and obstacles between the proposed site and The Haven, I would suggest that the risk and inherent damage caused at the site would be minimal, if at all, from this source.

Likewise overtopping of the Witham would only result in localised flooding to a relatively shallow depth. Taking into account the distance of the site from this source, the mixture of catchment areas beyond the urban envelope together with obstacles in between (houses and gardens) and general absence of contours the effect of flooding is likely to be minimal if at all.

The risk of rising groundwater and overspilling drains is unlikely to have an adverse effect upon the site in a high intensity storm. Any overflow is likely to be intercepted by the existing drainage system and controlled by the IDB pumps and defence systems.

## **8.0 Recommendations**

Given the potential for flooding on the site it would be prudent to adopt a precautionary approach with regard to the proposed development to minimise structural damage and to safeguard human life. Such aspects can be addressed by implementing:

- 1) Flood proofing measures to minimise the economic impact of a flood – positioning new electrical outlets a minimum 0.75m above ground level.
- 2) Registering the property on the Environment Agency's automated "Flood Warnings Direct" service (0845 9881188)
- 3) A flood evacuation plan made available to all occupants of the building.

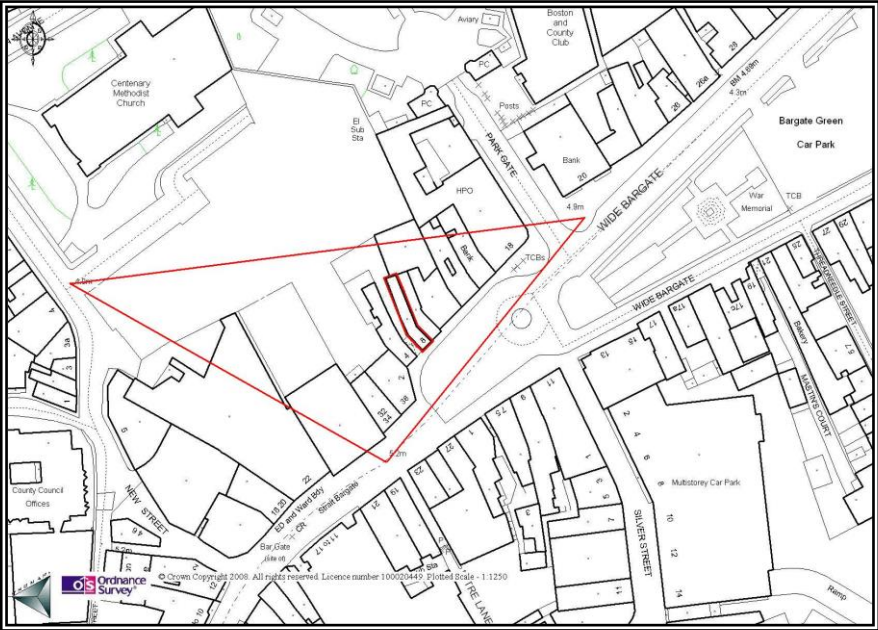
## **9.0 Conclusion**

According to information sought from the Environment Agency and Internal Drainage Board, the standard of tidal and fluvial defences appropriate to the proposed site will provide adequate protection against flooding from the more extreme high tides. Continual maintenance of existing flood defences should ensure that this level of protection is sustained for the life cycle of the property.

In the event of a breach or overtopping of the existing defences, there would be little (if any) effect to this proposal and given that the proposal is for means of access to first and second floors and does not contain additional habitable or commercial space, it is considered that there will be no increase to risk as a result of this development.

10.0 Maps

10.1

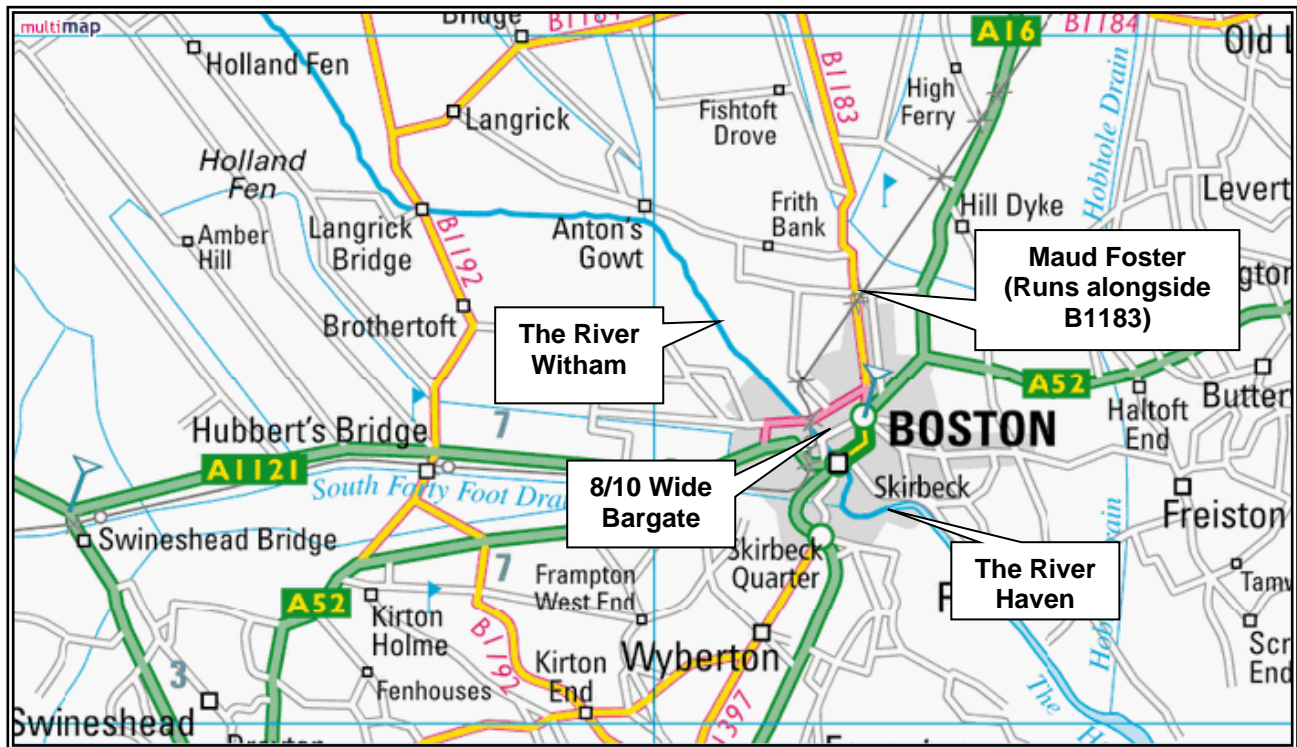


Map indicates that the site area is above 4.0m O.D.N. Actual site level has been estimated at 5.03m O.D.N.

10.2



Map showing site in relation to surrounding flood risk elements



Map showing site in relation to surrounding flood risk elements