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FLOOD RISK ASSESSMENT

IN RESPECT OF

PLANNING APPLICATION

FOR

PROPOSED MIXED-USE DEVELOPMENT

AT

10 BROAD STREET

SPALDING

PE11 1TB

FOR

Activ Property Management Ltd.

Job No B2931

December 2016

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PROPOSED MIXED-USE DEVELOPMENT

AT

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PE11 1TB

Date:	December 2016
Project Number:	B2931
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REVISIONS	A – September 2017 JD B – September 2017 JD

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Introduction

Neil Dowlman Architecture Ltd. has been engaged by Activ Property Management Ltd. to prepare a Flood Risk Assessment for the planning application for the proposed erection of residential development comprising 26no. one and two bedroom residential units. The site at 10 Broad Street, Spalding, Lincolnshire is currently occupied by the Broad Street Business Centre.

1.0 Development Site and Location

The site is located off Broad Street to the north-west (524842mE, 322787mN). The narrow frontage provide access on to a deep site that backs on to Spalding Youth Centre and the access track that feeds back onto Westlode Street. The buildings take up the full site area. To the north and immediately adjacent sits the Museum of Spalding Gentlemen's Society building, to the south lies the Constitutional Club civic building and bowling green. Further along the northern site boundary lie the backyards of properties facing onto Westlode Street. Properties 77 and 78 Westlode Street extend to the boundary with 10 Broad Street. Due to the extent of construction, no boundary treatments exist, the boundaries are defined by the external walls of the structure. The site is approximately 0.115 hectares in area.



Figure 1 - Site Location Plan

The site is currently occupied by a number of conjoined single storey portal framed structures that provide a B1 (Business) use.

As indicated in the Environment Agency Flood Map for Planning (below), the site and surrounding area is defined as being within Flood Zone 3. Flood Zone 3 is defined as having up to a 0.1 percent (1 in 1000) chance of a major flooding event happening each year and is based on flooding from fluvial sources such as rivers and the sea. Whilst this suggests that the site is heavily vulnerable to a flooding incident in the future the South Holland District Council Strategic Flood Risk Assessment indicates otherwise. This has been confirmed by the advice received for the Environment Agency that due to higher land levels, the site is considered to be outside of the hazard area. This advice takes into consideration the new climate change allowances. Additionally, Environment Agency Flood Maps indicate that there is no risk of surface water flooding on the site and there is no historical evidence of this.

Ordnance Survey ODN levels along Broad Street and Westlode Street indicate heights of 5.5mODN to 5.8mODN. These concur with survey measurements that indicate site levels very from 5.42mODN to 5.88mODN.

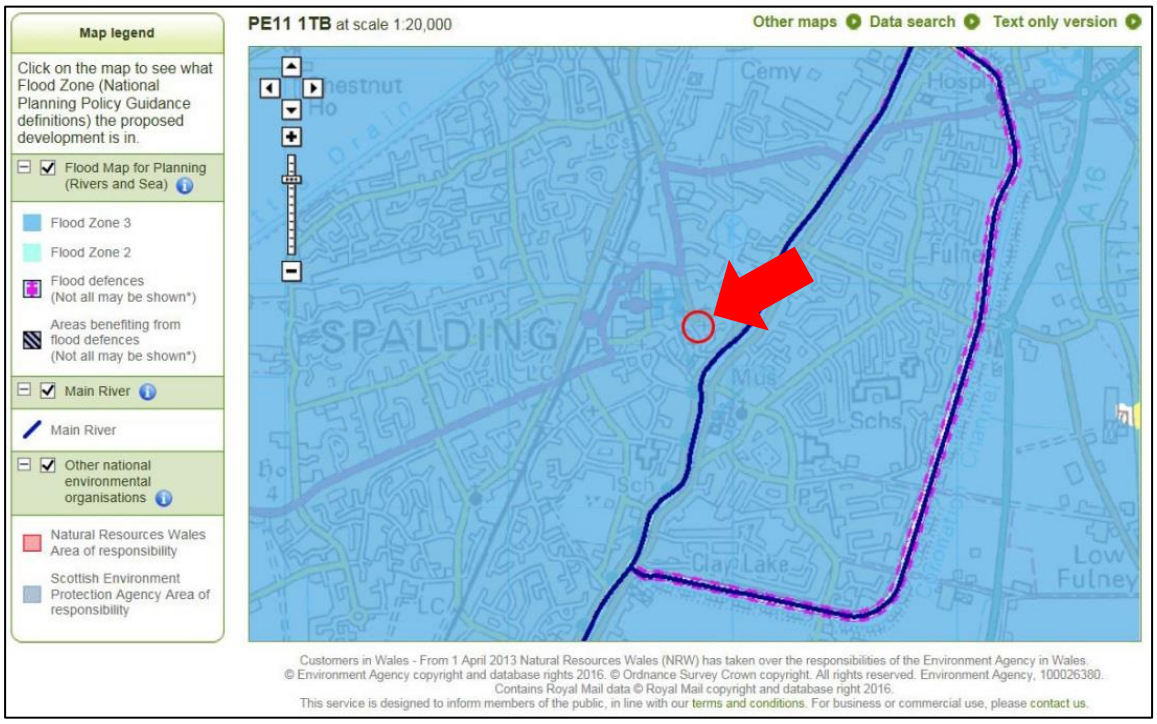


Figure 2 - Environment Agency Flood Map - Spalding

Flood hazard maps for the Spalding Area are shown below and indicate that for the worst case scenario of a 0.1% 2115 flood event the site is not at risk. The SFRA advises that:

'*The extents along the tidal River Welland arise partly because of potential breaching that could occur anywhere along the defences. In addition there would be overtopping in Spalding near Fulney Lock. Reference to [hazard maps] shows that about half of Spalding, including the town centre area, would remain at Low probability of flooding*.'

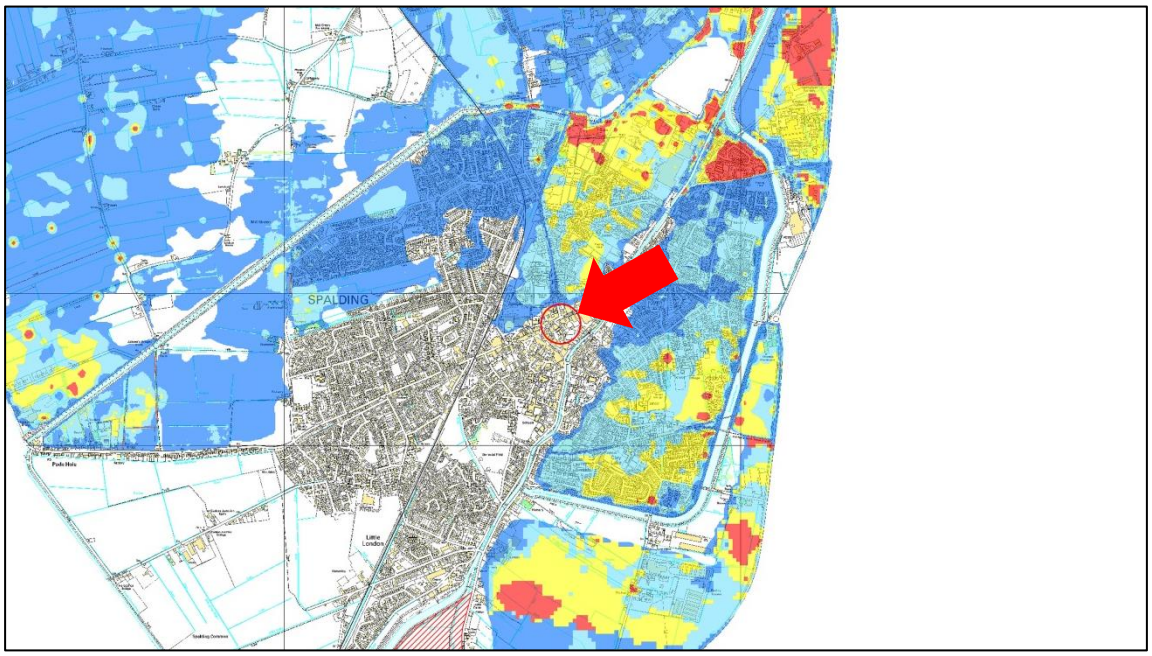


Figure 3 – South Holland District Council Strategic Flood Risk Assessment Map

Actual Peak Depth Year 2115 0.1% Probability

2.0 Development Proposals

This planning application relates to proposals for the erection of 26no. residential units along with associated infrastructure (including bin and bicycle storage), and landscaping. A new pedestrian access is proposed along Broad Street and the site will further benefit from improved access with the opening up of a new pedestrian entrance to the rear that leads on to Westlode Street. The redevelopment of the site will change the use of the site to class C3 (Dwellings) from the existing Class B1 (business) use.

The vulnerability classification of the proposed development can be considered to be 'More Vulnerable' (residential). The expected lifetime of the proposed development would be 50-100+ years.

Flooding probability at proposed development sites at the present-day

Site reference and proposed use		Flooding Probability	
Spalding:			
A	Urban	Low	
B	Housing	Low	
C	Housing	Low	
D	Employment	Low	
E	Employment	Low	
F	Employment	Low, but the site is in the rapid inundation zone.	
G	Employment	Low	
Donington:			
H	Employment	Low	Any Residual Risk arises only if the capacity of the local IDB system is exceeded
Holbeach:			
I	Urban	Low	
J	Housing	Low	
Long Sutton:			
K	Housing	Low	
L	Employment	Low	
Sutton Bridge:			
M	Housing	Low	
N	Employment	High, due to potential breach along the Wash frontage to the north. The vulnerability arises because the freeboard at two points is less than the minimum desirable. The site is also in the rapid inundation zone.	
O	Employment	Medium	These sites are also in the rapid inundation zone.
P	Employment	Medium	
Crowland:			
Q	Employment	Low	Any Residual Risk arises only if the capacity of the local IDB System is exceeded.

Possible flooding probability at proposed development sites in the future with contingency allowance for climate change

Site reference and proposed use		Flooding Probability	
		2055	2115
Spalding:			
A	Urban	Low	Low
B	Housing	Medium or Low	High
C	Housing	Medium or Low	High
D	Employment	Medium or Low	High
E	Employment	Medium or Low	High
F	Employment	Medium or Low	High
G	Employment	Medium or Low	High
Donington:			
H	Employment	Low	Low
Holbeach			
I	Urban	Medium or Low	Medium or Low
J	Housing	Medium or Low	Medium or Low
Long Sutton:			
K	Housing	Medium or Low	Medium or Low
L	Employment	Medium or Low	High
Sutton Bridge:			
M	Housing	Medium or Low	High
N	Employment	High	High
O	Employment	High	High
P	Employment	High	High
Crowland:			
Q	Employment	Low	Low

Figure 4 - Flooding Probability to Site references and proposed uses.

For developments in Flood Zones 2 and 3 a Sequential Test is normally required to show why the site should be developed instead of similar sites in less vulnerable areas. Because the site has been confirmed as outside of the hazard mapping area by the SHDC SFRA for the worst case scenario of a 2115 0.1% flood event, and the proposals are for brownfield development, the Sequential Test approach is not deemed necessary.

3.0 Climate Change

Advice from the Environment Agency has taken into account Climate change allowances and this has resulted in the recommendation that finished floor levels are raised to a minimum of 300mm above existing ground levels for areas that could be used for sleeping accommodation.

4.0 Site Specific Flood Risk

The main sources of flooding in the area are from the sea (i.e a breach of the sea defences or overtopping event) these have been shown to have zero probability of causing flooding on site. Additionally, the maintained watercourses of the River Welland and surrounding drains are a potential source of flooding, however these are unlikely to impact the site, as shown by the hazard maps, as the development site is significantly higher than the surrounding area. Surface water is also unlikely to cause flooding in the area. The probability of the site flooding is, at present, and taking into account climate change allowances, very low.

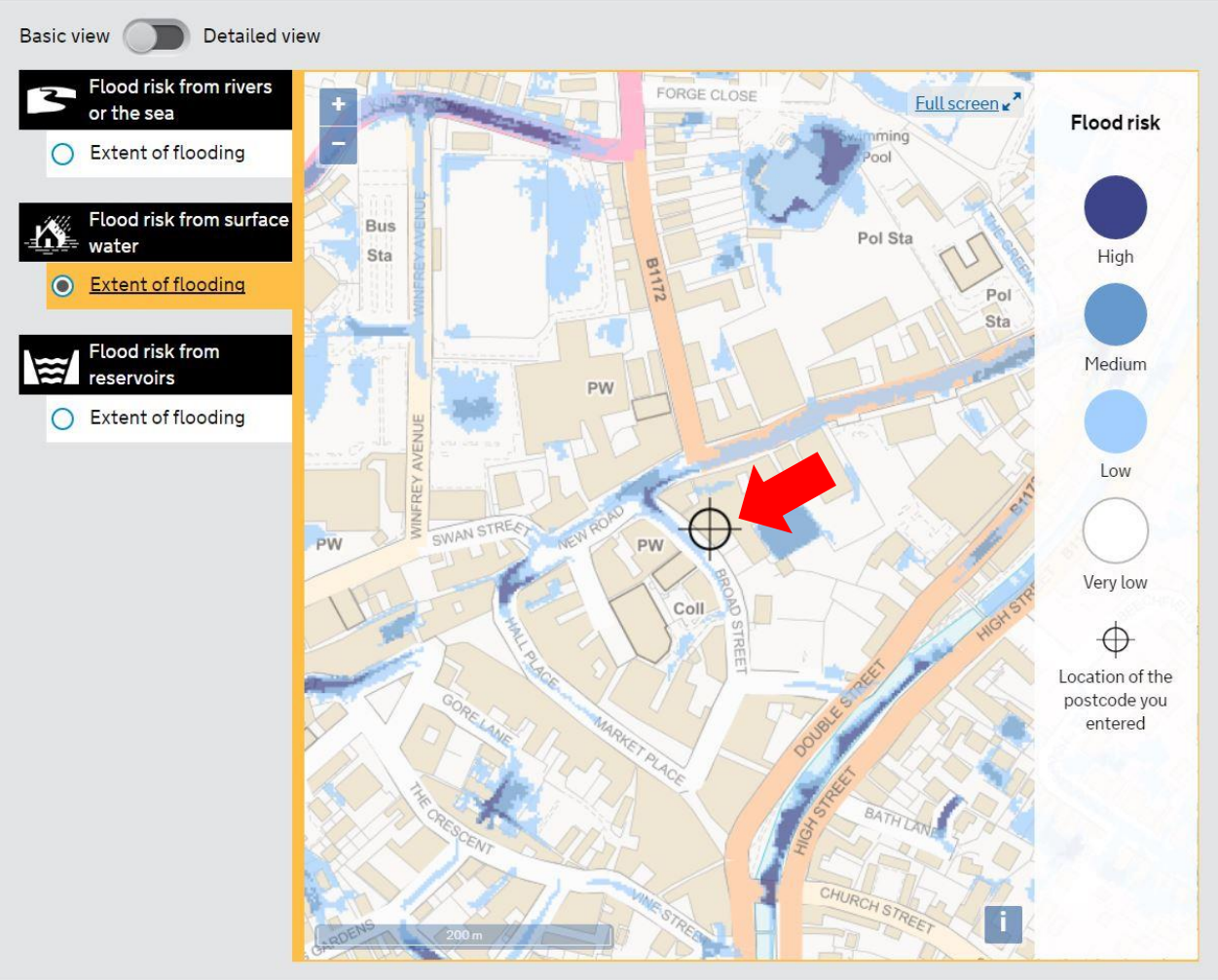


Figure 5 – Environment Agency Map, Flood Risk from Surface Water

5.0 Surface Water Management

At present there are no strategic surface water drainage problems in the District. Nearly all drainage is managed by the IDBs, whose levels of service are satisfactory for both urban and agricultural areas. In the future, if rainfall amounts and sea levels increase, the IDB levels of service will decline unless the drainage systems are enhanced. Such enhancement may take the form of increased drain capacity to provide more flood storage and may involve the installation of greater outfall pumping capacity. All the IDBs are known to be mindful of possible future conditions and their consequences. The IDBs have a good record of effective flood management, keeping pace with changing circumstances as they arise. One may expect this active approach to continue. In this case, although the operation and management of surface water drainage is vital to flood protection within the District, problems of a strategic nature should not develop.

Existing surface water is disposed of via mains sewer. The whole site is currently built on, and therefore the proposed development will not increase discharge of surface water. Surface water will continue to be disposed of via mains sewer.

6.0 Occupants and Users of the Development

The change of use and higher density redevelopment of the site is likely to increase the number of occupants using the building. It is expected that at least 54 persons could occupy the residential units. The change of use will also

affect the nature and time of occupation as residents will be living on site 24-hours-per-day. The proposed raising of finished floor levels has taken into consideration the vulnerability of residents to the potential future flood risk.

7.0 Residual Risk

Residual Risk Maps show the consequences from a flood event when assuming that any part of the raised defences may fail, regardless of apparent standard, together with the consequences of overtopping that would occur. This shows a wider potential flood risk area than arises when considering Actual Risk. The findings confirm how South Holland District is reliant on man-made measures, such as embankments and the internal drainage systems, for protection against flooding. This reliance extends not just to the existence of the measures but on their continued maintenance and operation. The residual risk maps indicate that the site will not be affected.

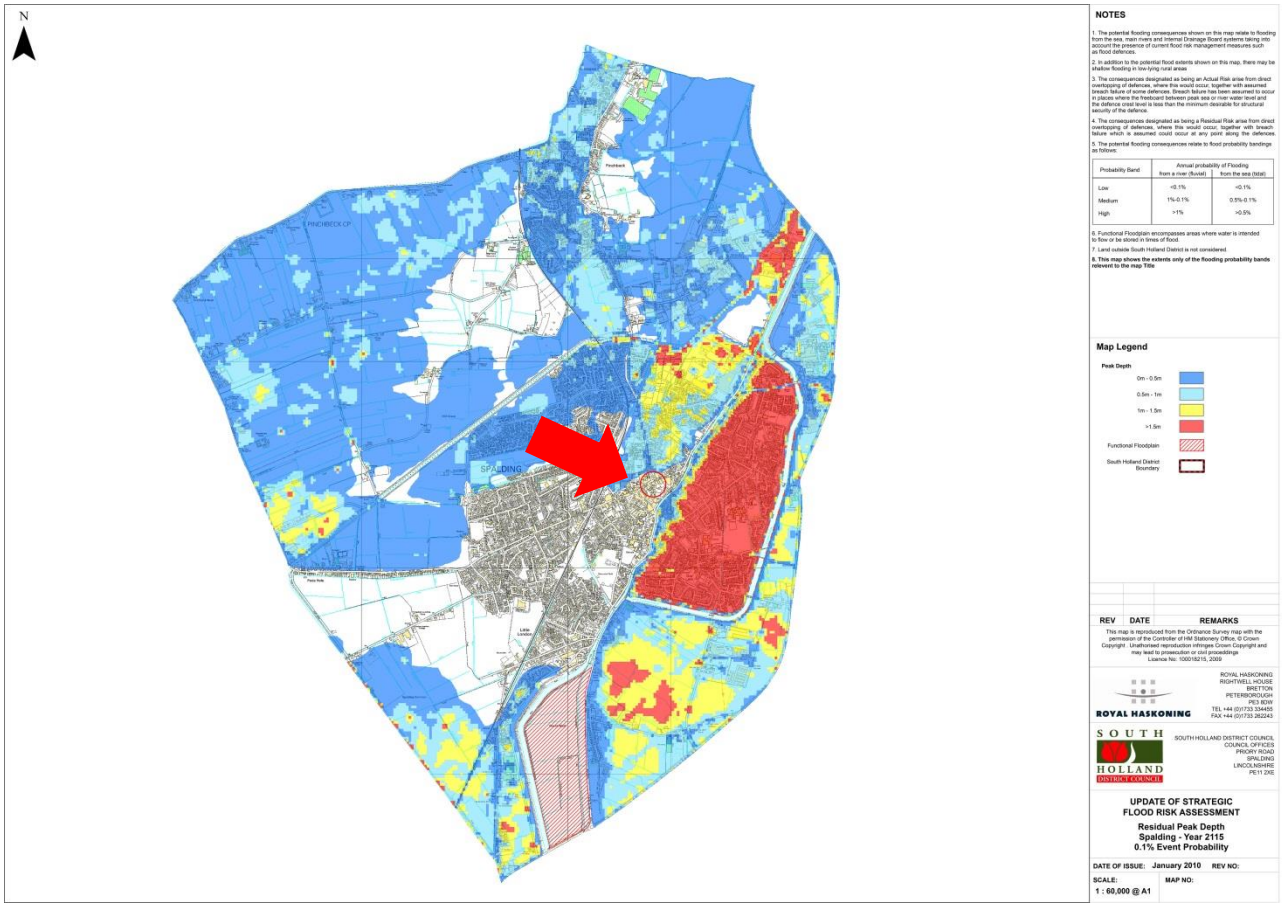


Figure 6 – South Holland District Council Strategic Flood Risk Assessment Map

Residual Risk Depth Year 2115 0.1% Probability

8.0 Conclusions

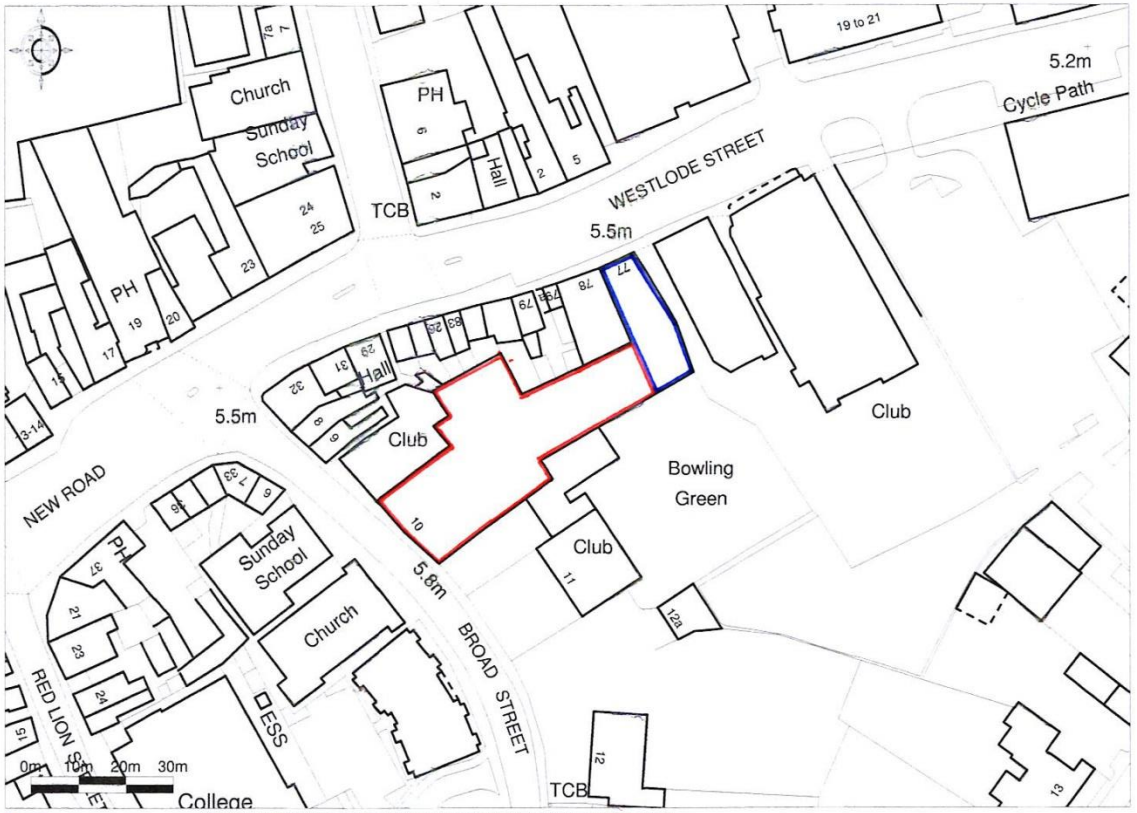
The proposal, described within this assessment, is a residential development to comprise of 26no. residential units.

The Environment Agency and South Holland District Council SFRA confirmed that the site lies within the “NO DANGER” category and would suffer from NO flooding, from breaching, as demonstrated by the Environmental Agencies 2115 year 0.1% (1 in 1000 year) modelling map.

To take account of climate change allowances the finished floors levels will be set a minimum of 300m above existing ground level. The proposed ground floor level will therefore be 6.18mODN.

APPENDIX A
Maps

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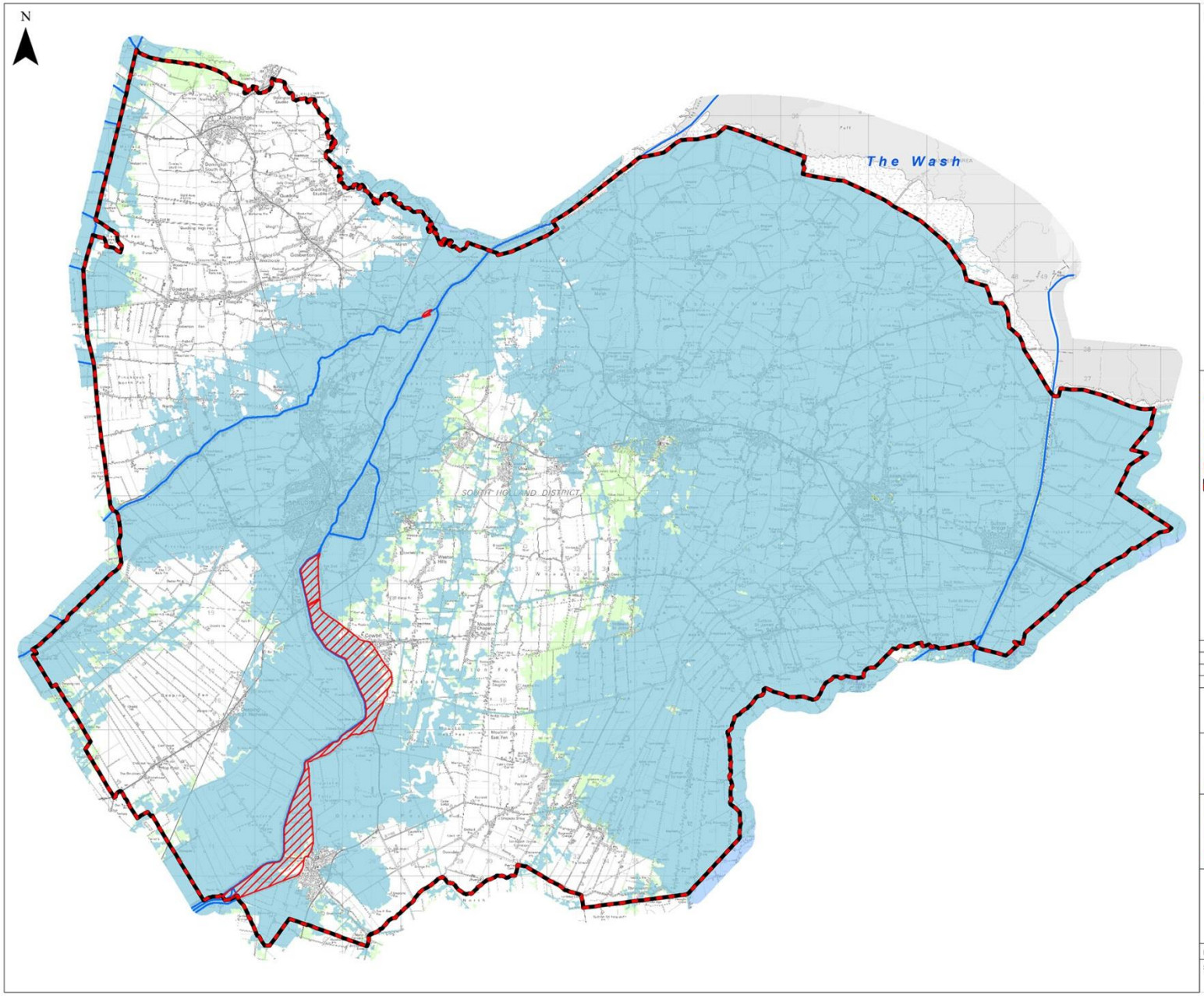


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Promap

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Ordnance Survey Location Plan



NOTES

1. The Flood Zones are as designated by the Environment Agency. They ignore the presence of flood defences.
2. The Flood Defences can be defined as follows:

Zone 3 - Land that could be flooded from the sea by a flood of 0.5% annual probability (once in 200 years on average) or greater, or from the river by a flood at 1% annual probability (Once in 100 years on average) or greater.

Zone 2 - The additional extent likely to be affected by a flood, from the sea or from a river, having a 0.1% annual probability (once in 1,000 years on average).

Zone 1 - Land other than Functional Floodplain, outside Zone 2 and 3.

Functional Floodplain - Areas where water is expected to flow or be stored in times of flood.

Map Legend

- Main Rivers
- Zone 1
- Zone 2
- Zone 3
- Functional Floodplain
- South Holland District Boundary

0 1 2 4 Kilometers

REV	DATE	REMARKS

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UPDATE OF STRATEGIC FLOOD RISK ASSESSMENT

Flood Zones

DATE OF ISSUE: Jan 2010 REV NO:

SCALE: 1:120,000 FIGURE NO: 7

SHDC SFRA Flood Zones Map