

FLOOD RISK ASSESSMENT

PROPOSED RESIDENTIAL DEVELOPMENT
BROADGATE
WESTERN HILLS
SPALDING,
PE12 6DQ

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June 2018 Version 1

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FLOOD RISK ASSESSMENT FOR RESIDENTIAL DEVELOPMENT BROADGATE, WESTON HILLS, SPALDING. PE12 8DQ

INTRODUCTION

The Government has placed increasing priority on the need to take full account of the risks associated with flooding at all stages of the planning and development process. This seeks to reduce the future damage to property and the risk to life from incidents of flooding. Their expectations relating to flooding are contained in the National Planning Policy Framework (NPPF) March 2012, which identify how the issue of flooding is dealt with in the drafting of planning policy and the consideration of planning applications by avoiding inappropriate development in areas at risk from flooding.

Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere. Local Plans should apply a sequential, risk-based approach to the location of development to avoid where possible flood risk to people and property and manage any residual risk, taking account of the impacts of climate change.

The Environment Agency's flood maps show areas that are at risk, from fluvial and tidal flooding. These maps show the limits of the flood plain of the area which could be affected by flood events, over topping or breaching of flood defences. They are based on the approximate extent of floods with a 1% annual probability of exceedance (1 in 100-year flood) for rivers and 0.5% annual probability of exceedance (1 in 200-year flood) for coastal areas under present expectations or the highest known flood. However, they do not take into account of the presence of defences or the likelihood that flood return intervals will be reduced by climate change.

This Flood Risk Assessment has been prepared in support of the planning application and considers the risk of flooding from fluvial and tidal sources. It also considers the risks of localised flooding due to inadequate Foul and Surface Water Sewers, Failure of Reservoirs, Water Main pipe bursts, Sewer Blockages, Pump Failures or High Ground Water Table etc.

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APPLICATION SITE

The site is located off Broadgate, Weston Hills Spalding. PE12 6DQ, within the administrative area of South Holland District Council. The National Grid Reference is TF 27678 19653. **Plan 1**

This flood risk assessment has been prepared for an outline planning application for up to 5 No 2 storey residential dwellings (Class C3). **Plan 2**

The Site would be classed as Non-Major Development applying the National Planning Policy Guidance (NPPG) as the site is to be developed for less than 10 dwellings.

The National Planning Policy Framework Technical Guidance NPPF defines three levels of flood risk depending upon the annual probability of fluvial flooding occurring.

Zone 1 – Low Probability (<0.1%)

Zone 2 – Medium Probability (0.1 – 1.0%)

Zone 3 – High Probability (>1.0%)

The proposed development site is shown to be within Flood Zone 3a 'High Probability' as detailed on the Environment Agency's Flood Zone Maps without defences, and as defined in Table 1 of NPPF.

Table 1: Flood Zones Definition (Ignoring the presence of defences)

Flood Zone 3 – High Probability
Definition This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
Appropriate uses The water-compatible and less vulnerable uses of land (Table 2) are appropriate in this zone. The highly vulnerable uses should not be permitted in this zone. The more vulnerable uses and essential infrastructure should only be permitted in this zone if the Exception Test is passed. Essential infrastructure permitted in this zone should be designed and constructed to remain operational and safe for users in times of flood.
Flood Risk Assessment requirements All development proposals in this zone should be accompanied by a Flood Risk Assessment.
Policy aims In this zone, developers and Local Authorities should seek opportunities to: • Reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage systems; • Relocate existing development to land in zones with a lower probability of flooding; and • Create space for flooding to occur by restoring functional floodplain and flood flow pathways and by identifying, allocating and safeguarding open space for flood storage.

Applying the Flood Risk Vulnerability Classification in Table 2 of NPPF the proposed residential use is classified as 'More Vulnerable', with Table 1 of NPPF stating that such uses are appropriate in this zone subject to the Exception Test.

Table 2: Flood Risk Vulnerability Classification

More Vulnerable
• Hospitals. • Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. • Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels. • Non-residential uses for health services, nurseries and educational establishments. • Landfill and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravans and camping, subject to a specific warning and Evacuation Plan.

From the topographical survey, the site is a reasonable level rectangular shape, land levels vary from 2.92m to 2.67mODN with the average being 2.80mODN, Broadgate road level is at 3.00mODN. **Plan 3**

The development will be designed to consider the potential flood depth at the site following a breach/ overtopping to the tidal flood defences for the 1 in 200-year event for scenario year 2115.

Environment Agency

The Environment Agency has permissive powers for reducing the risk of flooding from designated main rivers and from the sea.

The following potential sources of flooding affecting the development site have been identified as:

- The Wash / River Nene (Tidal)
- River Welland (Fluvial)

The flood zone maps indicate that the area would be flooded without flood defences. The Flood Map indicates the area at risk of flooding, **assuming no flood defences exist**, for a flood event with a 0.5% chance of occurring in any year for flooding from the sea, or a 1% chance of occurring for fluvial (river) flooding. It also shows the extent of the Extreme Flood Outline which represents the extent of a flood event with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater.

The Flood Map only indicates the extent and likelihood of flooding from rivers or the sea. It should also be remembered that flooding may occur from other sources such as surface water sewers, road drainage, etc.

These maps show that the site of the proposed development is within the extreme flood outline. The maps indicate that the area would be flooded without flood defences, which are in place along the river/ coastal edge (with an annual probability of more than 0.5% i.e. return frequency of less than 1 in 200 years for tidal flooding or more than 1.33% return frequency of less than 1 in 100 years for fluvial flooding). **Map 1**

The risk of flooding from Rivers and Sea shows that the site is at a Low risk of flooding. Low means that each year this area has a chance of flooding less than 1 in 1000 (0.1%). This considers the effect of any flood defences that

may be in this area. Flood defences reduce, but do not completely stop the chance of flooding as they can be overtopped or fail. **Map 2**

The flood banks for the Wash and River Nene, which both lie approximately 11km from the site, constitute the first line of defence against any tidal flooding. In this area, these consist of earth banks, within in a relatively sheltered environment, which is less of a hazard from wave action than the North Sea coastline.

Breach Analysis to the Tidal Defences

From Lincolnshire & Northamptonshire Area, Tidal Modal Analysis (June 2006) **Map 3)**

Peak tide levels Present Day (2006) at West Lighthouse. 0.5% (1 in 200) = 6.01mODN

Peak tide levels (2115) at West Lighthouse, 0.5% (1 in 200) = 6.01mODN plus climate change of 1143mm = 7.15mODN

Taking the precautionary approach, the Hazard Rating following a breach which in Flood Risk Assessment (FD 2320) Guidance for New Development Phase 2 R& D Technical Report these are classified as low <0.75, moderate 0.75-1.25, significant 1.25-2.50 and extreme >2.50 based upon an empirical measure of velocity and depth.

Flood Hazard value	Degree of flood hazard	Description	Indicative depth range
< 0.75	Low	Caution 'Flood zone with shallow flowing water or deep standing water'	Up to 0.25 m
0.75 – 1.25	Moderate	Danger for some (i.e. children) 'Danger: flood zone with deep or fast flowing water'	Up to 0.5 m
1.25 – 2.0	Severe	Danger for most 'Danger: flood zone with deep fast flowing water'	0.5 m to 3 m
> 2.0	Extreme	Danger for all 'Extreme danger: flood zone with deep fast flowing water'	0.5 m to over 3 m

$$HR = d \times (v + 0.5) + DF$$

Where V = Flood flow velocity (m/sec)

D = Flood depth (m)

DF = A debris factor included to represent the greater damage, or risk of injury to people, that can occur if debris is swept along with the water. = 0.5 for depths <0.25 or 1.0 for depths

Flood depth (m)	All areas (rural and urban)
≤ 0.25	0.5
> 0.25	1

For the degree of Flood Hazard to be classified as low HR must be <0.75.

The maps contained in the 2016 Update of South Holland Strategic Flood Risk Assessment have been used as these maps contain the tidal flooding information mapping from the latest Environment Agency Tidal Hazard mapping. Where the mapping for an area contains both fluvial and tidal components, the more severe of the two has been presented.

Flood map for planning

Your reference
Western Hills

Location (easting/northing)
527665/319641

Created
19 Jun 2018 1:22

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

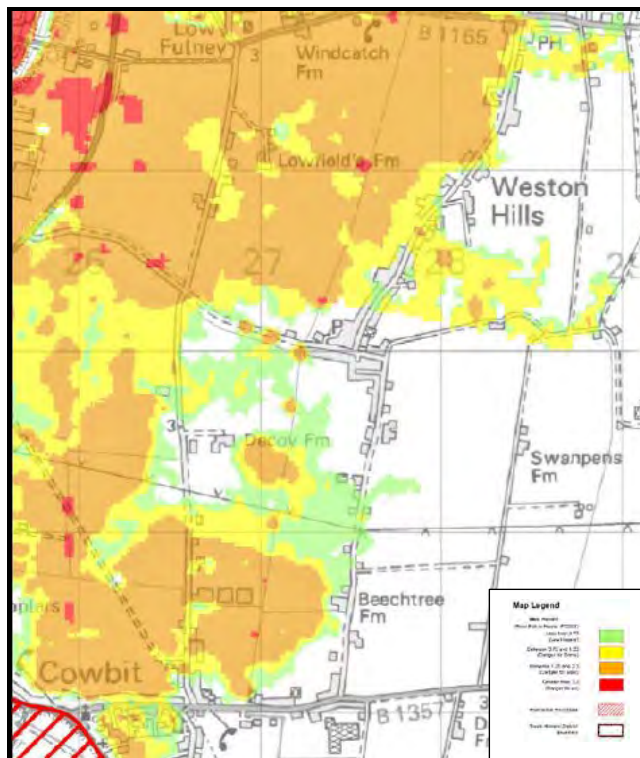
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With climate change, the Residual Risk Extent Map District (2116) 1 in 100-year fluvial & 1 in 200-year tidal event probability and the Residual Hazard Maps for Scenario year 2116 for the 1 in 100-year fluvial & 1 in 200-year tidal event shows that the site for the development is not within a Hazard Rating area and therefore not subject to flooding from a breach to the flood defences.

SHDC Residual Risk Extent Map District (2116)
1 in 100-year fluvial & 1 in 200-year tidal event probability



SHDC Residual Hazard Maps for Scenario year 2116
1 in 100-year fluvial & 1 in 200-year tidal event



The site is also shown on the Residual peak depth Extent of Fluvial & Tidal Domination District year 2115 1% Fluvial/0.5% Tidal Event Probability Map not to be affected from either tidal or fluvial flooding as the site lies outside the affected areas. **Map 4.**

The Environment Agency recommends for any proposal that single storey developments that include ground floor sleeping accommodation should be informed by the flood depths arising from the 2115 0.1% breach scenario. Any proposals that do not include ground floor sleeping can be informed by the flood depths arising from the 0.5% breach scenario.

For areas where the flood depths are 0 – 0.25 the finished floor level should be 300mm above the existing ground level.

The ground floor levels for the 4 No two storey dwellings will be set at a minimum of 3.10mODN which is 300mm above the existing average ground level (2.80m).

South Holland District Council

In order to inform the process of risk assessment and site selection the District Council commissioned Consultants

in 2010 to prepare a Strategic Flood Risk Assessment which has recently been replaced by the. 2016 Update of South Holland Strategic Flood Risk Assessment

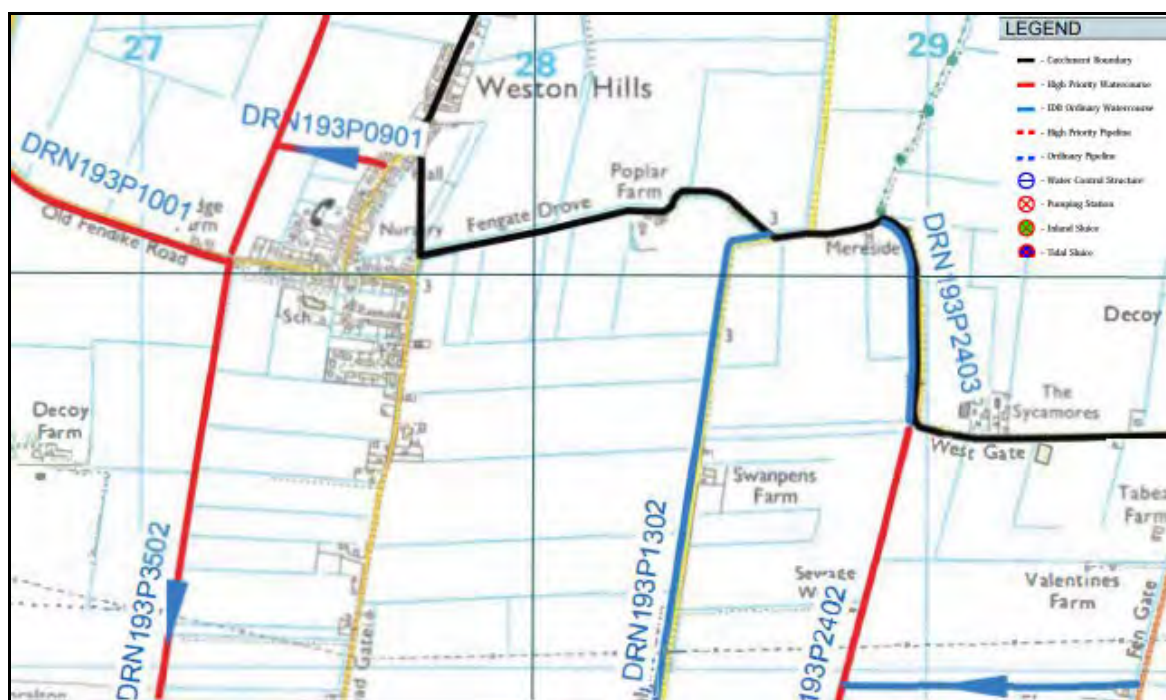
The whole of the tidal flooding information has been replaced by the mapping from the latest Environment Agency Tidal Hazard mapping. Where the mapping for an area contains both fluvial and tidal components, the more severe of the two has been presented.

These maps from the 2016 Update of South Holland Strategic Flood Risk Assessment have been used for this Flood Risk Assessment.

South Holland Internal Drainage Board

The proposed development site is located within the catchment area of South Holland Internal Drainage Board. The Board is responsible to operate and maintain the arterial fluvial system.

The site lies within the Boards catchment area B Wisemans N. The Board's nearest High Priority Watercourse (Wheatmere Drain) DRN193P3503 lies some 490m west of the site and the Boards Ordinary Watercourse (Delgate Drain) DRN193P1302 lies some 750m to the east of the site.



The Board do not have any record of any flooding in this area associated with the Board's system.

SURFACE WATER FLOODING

The site is not shown on the Surface Water flood maps for the 1 in 1000-year scenario, to be affected by surface water flooding. Very low risk means that each year this area has a chance of flooding of less than 1 in 1000 (0.1%). Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. **Map 5**

FLOODING FROM OTHER SOURCES

Flooding is a natural process and can happen at any time from sources other than watercourses and the sea.

- Flooding from land can occur from intense rainfall, often over short duration of time that is unable to soak into the ground or enter the drainage system. However, with the natural topographic nature of the ground being flat, with no high ground around the site this will not cause any rapid inundation of the site and is likely only lead to local ponding of shallow depth and low velocity following the natural land contours which fall away from the site. With the ground floor levels of the dwellings being raised 300mm above the existing ground level, flooding from this source is limited to minor isolated cases and is not of strategic significance with regards to flood risk.
- The area is not known to suffer from any groundwater problems and therefore is taken as having no strategic significance with regards to flood risk.
- Flooding from sewers can occur from over loading from heavy rainfall caused by blockages or having inadequate capacity. However, with the natural topographic nature of the ground having gradient south-eastwards away from the development. With the ground floor levels of the dwellings being raised 300mm above the existing ground level, flooding from this source is limited to minor isolated cases and is not of strategic significance with regards to flood risk.
- Non-natural or artificial sources of flooding such as reservoirs, lakes or canals where water is stored above natural ground level could cause flooding if the structure fails or is over topped. There are no known sources within the vicinity of the site.

RESIDUAL RISKS

There is always a possibility of a flood more than that allowed for which might conceivably cause some flooding to the properties. However, such an event would have a very low probability and the risk of flooding to the property would be extremely small. It is therefore considered that the residual risks associated with flooding are not significant.

SEQUENTIAL APPROACH

When applying the sequential approach for flood risk in accordance NPPF the site of the barn would fall into Flood Zone 3 (High Probability) as the site is shown to be within the fluvial flood plain as shown on the Environment Agency's Flood Map without defences in place.

The Environment Agency categorise land into one of three Flood Zones.

- Flood Zone 1 is land outside the 0.1% floodplain (with a chance of flooding of less than 0.1% chance in any given year);
- Flood Zone 2 is land that falls between the 1 in 100-year extent and the 1 in 1000-year extent (a chance of

flooding between 1% and 0.1% in any given year);

- Flood Zone 3a is land which falls within the 1 in 100-year flood extent (has a 1% chance of a flood occurring in any given year).

Applying the Flood Risk Vulnerability Classification in Table 2 of NPPF, the proposed development for residential use is classified as, “More Vulnerable” with Table 1 of NPPF stating that such uses are appropriate in Flood Zone 2 (as summarised in Table 3 NPPF).

TABLE 3: Flood risk vulnerability and flood zones ‘compatibility’

Flood risk vulnerability classification		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood Zone	Flood Zone 1	✓	✓	✓	✓	✓
	Flood Zone 2	✓	✓	Exception Test required	✓	✓
	Flood Zone 3a	Exception Test required	✓	✗	Exception Test required	✓
	Flood Zone 3b Functional Floodplain	Exception Test required	✓	✗	✗	✗

NPPF Guidance Paragraphs 100 - 104 requires development within high areas of flood risk be determined using a sequential risk based approach to the location of development to avoid where possible flood risk to people and property and manage any residual risk, taking account the impacts of climate change.

Sequential Test

The aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. The NPPF states that development should not be permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding. It is important to note that the Sequential Test does not specifically mean that sites such as this cannot be developed, rather that sites at less risk should be developed first.

A Sequential & Exception Test has been prepared by others and for the purpose of this report it is deemed to be compliant.

CLIMATE CHANGE

Global warming is now recognised that it is likely to affect the frequency and severity of extreme events as both tidal and fluvial flooding. The Climate change allowances in the NPPF Guidance was updated on the 19th February 2016.

The site is located within the Anglian River Basin, for sites within Flood Zone 3 and for “More vulnerable” land uses the Higher Central and Central river flow allowances figures in Table 1 should be used.

Table 1 Peak river flow allowances by river basin district (1961 to 1990 baseline)				
River basin District	Allowance category	Total potential change anticipated for '2020s' (2015 to 2039)	Total potential change anticipated for '2050s' (2040 to 2069)	Total potential change anticipated for '2080s' (2070 to 2115)
Anglian	Upper End	25%	35%	65%
	Higher central	15%	20%	35%
	Central	10%	15%	25%

The effect of global warming on peak rainfall allowances is given in Table 2

Table 2 Peak rainfall intensity allowance in small and urban catchments (1961 to 1990 baseline)			
Applies across all of England	Total potential change anticipated for 2010 to 2039	Total potential change anticipated for 2040 to 2059	Total potential change anticipated for 2060 to 2115
Upper End	10%	20%	40%
Central	5%	10%	20%

The annual sea rise due to climate change is given in NPPF and the recommended contingency allowances are stated in Table 3.

Table 3 Peak sea level allowance for each epoch in (mm) per year with cumulative sea level rise for each epoch in brackets (use 1990 baseline)					
Area of England) (Use River Basin maps	1990 to 2025	2026 to 2050	2051 to 2080	2081 to 2115	Cumulative Rise 1990 to 2115 (m)
East, Midlands, London, South East	4 (140mm)	8.5 (212.5mm)	12 (360mm)	15 (525mm)	1.24m

DRAINAGE STATEMENT

In accordance with recognised guidance, National Planning Practice Guidance and the Building Regulations there is a hierarchy of the aims, as to where surface water should be discharged. This hierarchy should be followed in order, where practicable, and is as follows:

- 1) Infiltration
- 2) Watercourse
- 3) Public sewer

Infiltration

The ground is considered to be suitable for infiltration methods to be used for the disposal of surface water.

It is therefore proposed that the roof water from the new dwellings will discharge to pvc crate soakaways. A water

butt of at least 120L internal capacity shall be installed to intercept rainwater draining from the roof of the building, to reduce the risk of flooding and demand for water by recycling and to increase the level of sustainability of the development. The access and parking areas will be constructed in permeable materials.

Foul Water

Foul sewage from the new dwellings will be connected into a foul drainage pipe system and outfall into the Anglian Water foul sewer in Broadgate.

As there is a positive drainage system capable of receiving flows from the development there is no likely impact on neighbouring property.

FLOOD PROTECTION

Any impact of damage to the properties can be foreseen and mitigated against by relatively simple design and construction techniques. There are two forms of flood protection works: -

- **Flood-resistance or proofing works:** - these try to reduce the amount of water entering a building.
- **Flood-resilient works:** - these reduce the amount of damage caused by water entering the building.

The proposed property will have the following resilient measures incorporated in the construction in accordance with "Improving the flood performance of new buildings" CLG (2007).

- The ground floor living accommodation for the dwellings is to be raised to 3.10mODN, in accordance with the Environment Agency's recommendations.
- The ground floor to be constructed with a solid concrete floor with no voids beneath and no low-level wall vents. However, if a beam type floor is to be used, provision should be incorporated for draining the under-floor voids. The wall vents are to be fitted with 'Flood Angel' air bricks which allow air to free pass through as a usual, (complying with BS493:1995) but under flood conditions it shuts down when in contact with water. A removable mesh prevents the passage of debris which may otherwise impinge on the moving part.
- Use Close Cell cavity insulation to the ground floor level.
- External doors to be of construction not susceptible to moisture.
- Arrange for all service circuits to be routed at first floor level where practical socket outlets, boilers etc. to be a minimum of 0.5m above the ground floor level.
- As this site is in an area that can receive flood alerts from the Environment Agency Floodline

Warning Direct system. It is recommended that the property Owner contact the Environment Agency's Floodline on **0845 988 1188** to register the property to receive warnings of flooding by telephone, mobile, fax, SMS text, email or pager. The Environment Agency aim to issue a 'severe flood warning' approximately 2 hours before existing defences are overtopped.

CONCLUSION

- o The site for the proposed change of use is shown to lie within the Flood Zone 3a (High Probability), which is land assessed as having a less than 1 in 100 annual probability of river or sea flooding in any year (1%), without defences on the Agency's flood maps.
- o The ground floor living accommodation for the dwellings is to be raised 300mm above the existing ground level to 3.10mODN, this is in accordance with the Environment Agency's recommendations.
- o Applying the Flood Risk Vulnerability Classification in Table 2 of NPPF. The proposed use of the land and buildings for residential use falls within the 'More Vulnerable' uses of land shown in Table 2 Flood Risk Vulnerability Classification and buildings used for all purposes are appropriate in Flood Zone 3a subject to the Exception Test.
- o No obvious constraints have been identified that may impact the proposed development and the type of mitigation measures that can be used to reduce the flood risk.

APPENDIX

Map 1	Environment Agency Flood Map.
Map 2	Flooding from Rivers and Sea Map
Map 3	Lincolnshire & Northamptonshire Area Tidal Model Analysis Map
Map 4	South Holland SFRA Residual Peak Depth Extent of Fluvial & Tidal Domination District year 2115 1% Fluvial/0.5% Tidal Event Probability Map
Map 5	Surface Water Flood Map
Plan 1	Location Plan/ Site Layout/ Topographical Survey

Flood map for planning

Your reference
Western Hills

Location (easting/northing)
527665/319641

Created
19 Jun 2018 1:22

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

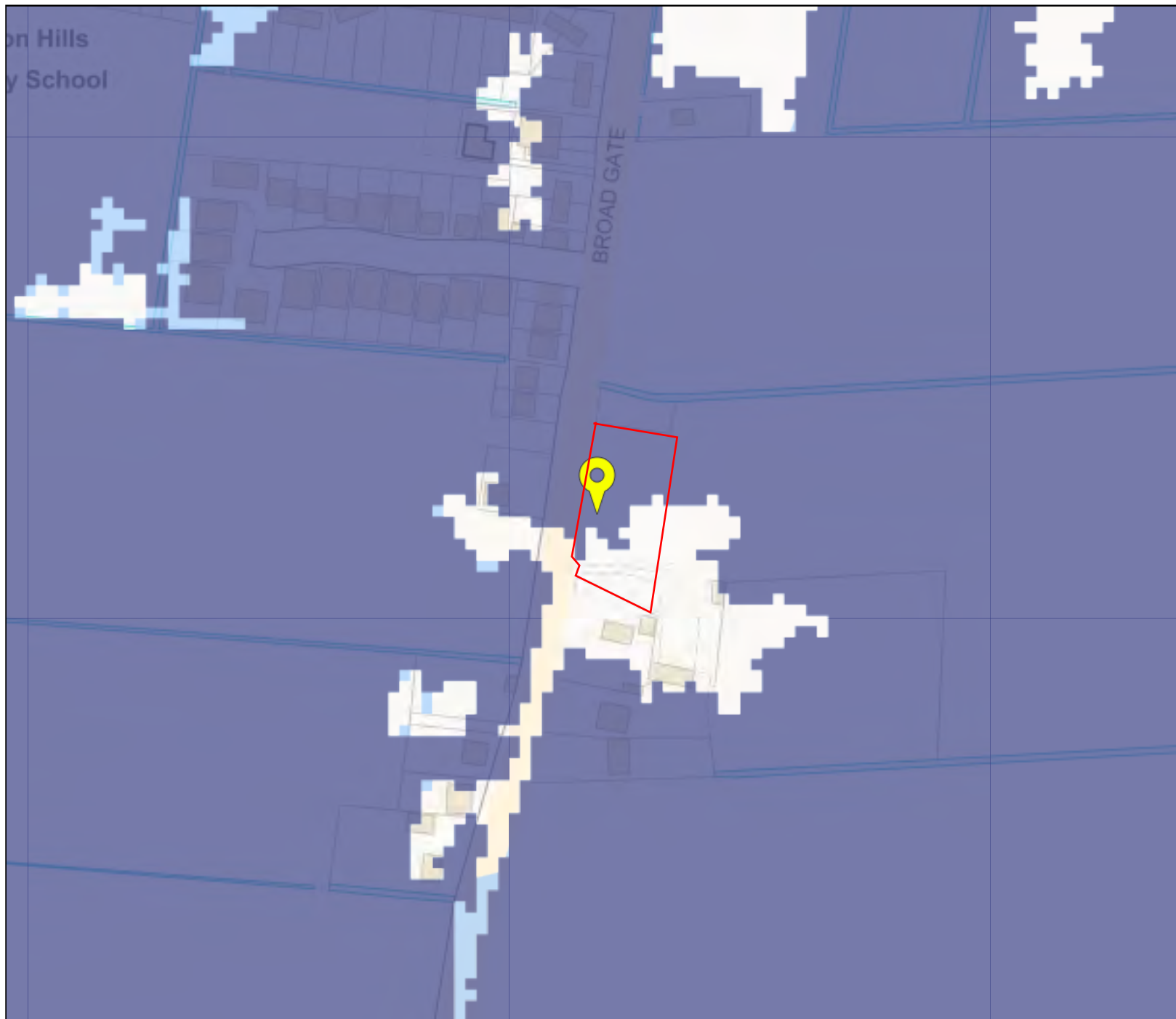
- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

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Flood map for planning

Your reference
Western Hills

Location (easting/northing)
527665/319641

Scale
1:2500

Created
19 Jun 2018 1:22

-  Selected point
-  Flood zone 3
-  Flood zone 3: areas benefitting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area

0 20 40 60m



Flood risk from rivers or the sea

- ☒ Extent of flooding
- ☐ Depth and flow estimates at monitoring stations

Flood risk from surface water

- ☐ Extent of flooding
- ☐ High risk: depth
- ☐ High risk: velocity
- ☐ Medium risk: depth
- ☐ Medium risk: velocity
- ☐ Low risk: depth
- ☐ Low risk: velocity

Flood risk from reservoirs

- ☐ Extent of flooding
- ☐ Flood depth



Flood risk



High



Medium



Low



Very low



Location you selected



Map 2

Lincolnshire & Northamptonshire Area

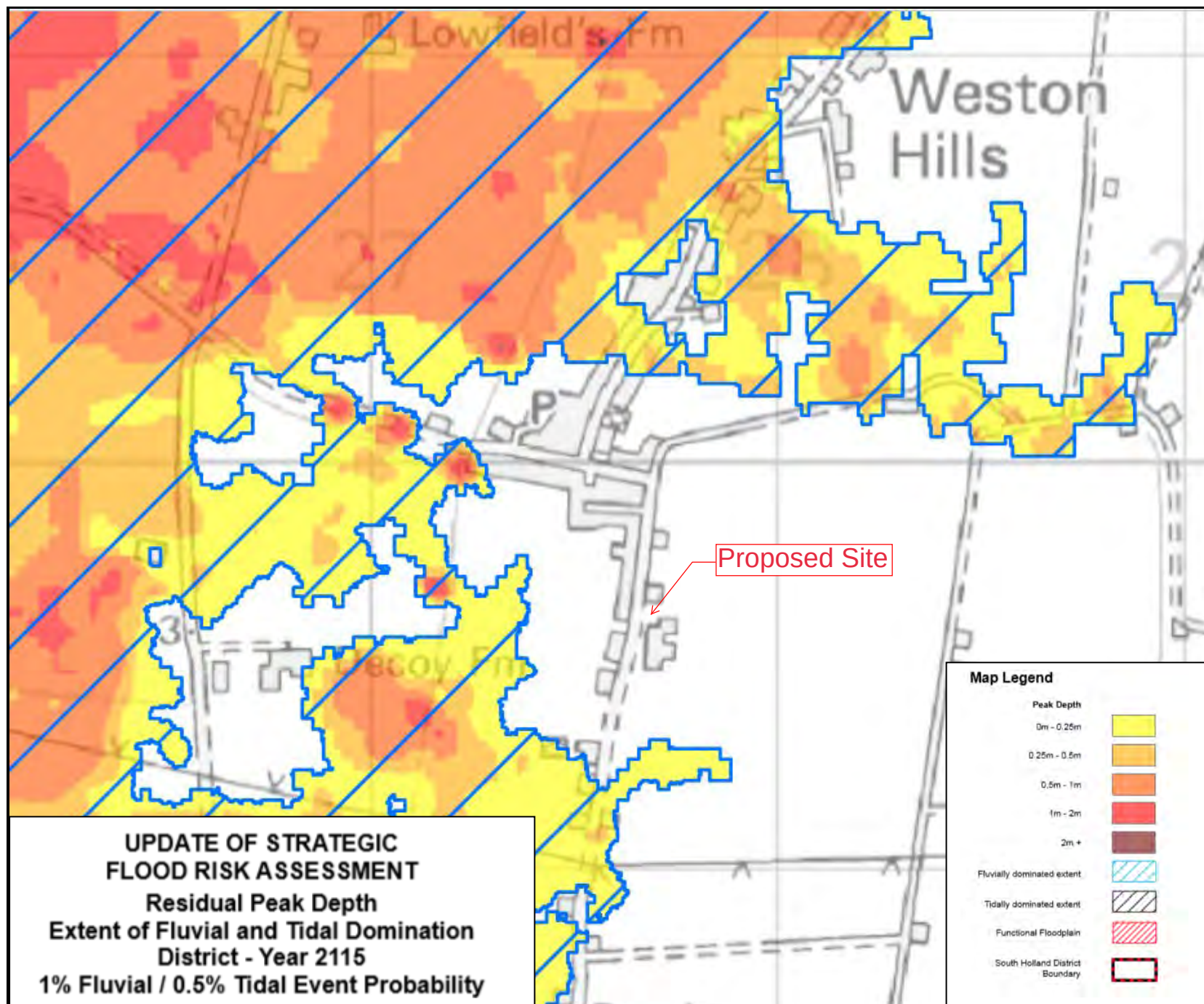


Tidal Water Levels for the South Humber, East Coast and The Wash

The table below shows still water levels for locations, from the above location map, around the South Humber Estuary, East Coast and The Wash. It is important to note the following:

- The base date for the data is 2014 for the South Humber and 2006 for the East Coast and The Wash.
- The data are still water levels. Depending on the use of the data it may be necessary to consider wave heights and / or joint probability analysis of water level and other variables.
- The water level quoted is the ‘Best Estimate’ water level. Depending on the use of the data it may be necessary to carry out sensitivity testing. Upper and Lower 95% confidence bandings are available upon request.
- Levels for other annual chance scenarios are available if required.

Ref	Location	Easting	Northing	Annual Chance (1 in x) of Tide Level					
				metres ODN					
				1	10	50	100	200	1000
HUMBER									
H030	Tetney	535420	403180	3.94	4.29	4.56	4.69	4.82	5.15
H050	Buck Beck	532700	406580	4.03	4.36	4.62	4.74	4.87	5.18
H060	Grimsby	527878	411346	4.10	4.43	4.70	4.82	4.95	5.27
H080	Haborough Marsh	520790	415740	4.26	4.61	4.88	5.01	5.14	5.47
H090	Immingham	519141	417449	4.26	4.61	4.88	5.01	5.14	5.47
H100	South Killingholme	518700	417120	4.41	4.77	5.05	5.18	5.32	5.66
H130	North Killingholme	516530	420000	4.51	4.87	5.15	5.28	5.42	5.77
H150	East Halton	514450	422870	4.59	4.96	5.25	5.39	5.53	5.89
H170	Goxhill	511970	425440	4.67	5.04	5.34	5.47	5.61	5.95
H200	New Holland	508020	424330	4.87	5.26	5.55	5.68	5.81	6.12
H210	Barrow Haven	506380	422620	4.92	5.31	5.60	5.73	5.86	6.17
H220	Ferriby	497550	421150	5.04	5.42	5.67	5.77	5.86	6.04
H230	Winterton	493420	422830	5.14	5.51	5.74	5.83	5.90	6.02
H250	Blacktoft	484247	424190	5.25	5.62	5.83	5.90	5.96	6.04
H270	Goole	474857	422960	5.46	5.85	6.07	6.15	6.21	6.29
East Coast									
~	Great Eau	545500	393800	3.80	4.19	4.46	4.57	4.69	4.96
~	Boygrift	553300	379800	3.84	4.24	4.53	4.65	4.77	5.05
~	Burgh Sluice	555190	358620	4.26	4.45	4.76	4.90	5.03	5.34
Wash									
~	Hobhole	536610	339940	4.82	5.30	5.64	5.78	5.93	6.27
~	Lawyers Sluice	540750	334550	4.84	5.32	5.66	5.80	5.95	6.29
~	West Lighthouse	549150	325750	4.88	5.37	5.71	5.86	6.01	6.35
~	Grand Sluice	532400	344500	4.88	5.33	5.65	5.78	5.93	~
~	Fosdyke Bridge	531700	332200	4.91	5.38	5.71	5.85	5.99	~
~	Marsh Road	526000	324000	5.04	5.44	5.73	5.85	5.98	~
~	Wisbech	546100	310000	4.83	5.25	5.53	5.66	5.78	~
~	Dog In Doublet	527300	299300	3.67	4.00	4.22	4.32	4.42	~



Map 4

 Flood risk from rivers or the sea

- ☐ Extent of flooding
- ☐ Depth and flow estimates at monitoring stations

 Flood risk from surface water

- ☐ Extent of flooding
- ☐ High risk: depth
- ☐ High risk: velocity
- ☐ Medium risk: depth
- ☐ Medium risk: velocity
- ☒ Low risk: depth
- ☐ Low risk: velocity

 Flood risk from reservoirs

- ☐ Extent of flooding
- ☐ Flood depth
- ☐ Flood speed



Low risk scenario
Flood depth (millimetres)



Over 900mm



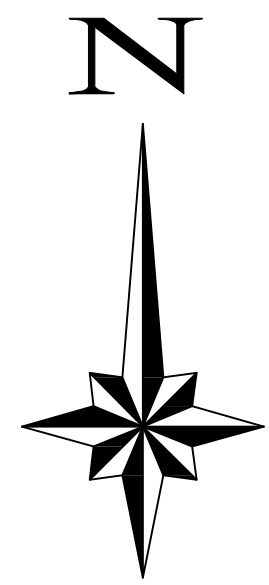
300 to 900mm



Below 300mm



Location you selected



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LOCATION PLAN SCALE 1-1250

clive wicks associates

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Contractors must check all dimensions on Site. Only figured dimensions are to be worked from. Any foundation depths indicated are indicative only and must be in accordance with the consulting engineers design and/or agreed on site with the local authority during excavations. Any discrepancies in the information contained herein must be reported to the Architect before work proceeds.
Drawings to be read with Engineers calculations / report where applicable.
Note: If drawing details existing structures, we have not inspected woodwork or other parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect.

Project	Land to the South of 247 Broadgate WESTON HILLS, SPALDING. PE12 6DQ		
Dwg.	PROPOSED SITE PLAN		
Scale	1:500 @ A1	Date	June '18
Dwg No.	17-2366-01	Rev.	-
architects • designers • planning consultants			
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