

FLOOD RISK ASSESSMENT

Proposed Change of Use
Ladysmith House,
Cranmore Lane,
Holbeach,
PE12 7HU



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RMA

Contents

EXECUTIVE SUMMARY	1
INTRODUCTION	1
APPLICATION SITE.....	2
Table 1 Annex 5 NPPF: Flood zones (risks from river and sea flooding)	2
Table 2 Annex 5 NPPF: Flood risk vulnerability classification	2
Site Levels.....	3
DESIGN FLOOD	3
DRAINAGE AUTHORITIES	3
Environment Agency	3
Flood Zones	4
Flood Map for Planning (Source EA).....	4
Flood Map for Planning with Climate Change (Source EA).....	5
Risk of Flooding from Rivers & Sea	5
Risk of Flooding from Rivers & Sea Map Present Day (Source EA)	6
Risk of Flooding from Rivers & Sea Map With Climate Change (Source EA)	6
Schemes in the Area.....	6
Fluvial Flooding	6
Tidal Flooding.....	6
Breach Analysis to Welland / The Wash Defences	7
Breach Hazard Maps, for Scenario year 2115 Climate Change, for the 1 in 1000-year event.	7
Climate Change	8
MITIGATION	8
SOUTH HOLLAND INTERNAL DRAINAGE BOARD	9
Extract from South Holland IDB Drainage Map	9
FLOODING FROM OTHER SOURCES	10
RESIDUAL RISKS.....	11
HISTORIC FLOODING	11
SURFACE WATER FLOODING	11
Risk of flooding From Surface Water Map Risk of flooding From Surface Water Map	
1 in 100year Present Day (Source EA). 1 in 100year 2061 - 2125 (Source EA).	12
SEQUENTIAL APPROACH.....	12
Table 3 Annex 5 NPPF: Flood Risk Vulnerability and Flood Zone 'Incompatibility'	13
CLIMATE CHANGE	13
Table 1 Peak Rainfall Intensity	13
Table 2 Peak Sea Level Rise	14
DRAINAGE STATEMENT	14
Surface Water Drainage.....	14
Foul Water Drainage	14
FLOOD RESILIENCE CONSTRUCTION	14
CONCLUSION	15

Figures

Plan 1	Location Plan
Plan 2	Existing Site Plan
Plan 3	Proposed Site Plan
Plan 4	Existing Floor Plans
Plan 5	Proposed Floor Plans
Plan 6	LIDAR 1m DTM Site Levels

FLOOD RISK ASSESSMENT FOR PROPOSED CHANGE OF USE LADYSMITH HOUSE, CRANMORE LANE, HOLBEACH, PE12 7HU

EXECUTIVE SUMMARY

Summary of Possible Sources of Flooding		
Source	Significant	Comment
Fluvial (Main River)	No	Not at Risk from a breach or overtopping of the fluvial defences
Tidal	Low	The site may be at risk from Tidal sources in the form of residual risk due to the failure of flood management infrastructure such as a breach of a raised flood defence. scenario, today or with an allowance for climate change
Pluvial	No	Not shown on Flooding from Surface Water to be affected for the 1% with CC event
Ground Water	No	This site is outside of a groundwater flood alert area.
Overland flow	No	No high ground surrounding the site
Blockage	Low	Riparian Dyke close to the site
Infrastructure	No	No Public sewers in the vicinity of the site
Reservoirs	No	Site at no Risk in the Dry/ Wet Day scenarios
Lakes & Canals	No	No lakes or canals close to the site

INTRODUCTION

The Government has placed increasing priority on the need to take full account of the risk 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 August 2026, (NPPF), which identifies 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 and to direct development away from areas at highest risk.

The NPPF provides that development in areas at risk of flooding should be avoided and seeks to direct development away from areas at highest risk. There is a sequential, risk-based approach to the location of development avoiding where possible, flood risk to people and property managing any residual risk and taking account of the impacts of climate change.

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APPLICATION SITE

The proposed site is located on land at Ladysmith House, Cranmore Lane, Holbeach, PE12 7HU within the administrative area of South Holland District Council. The National Grid Reference at the centre of the site is TF34785 23681. What3Words location ///clicker.bandwagon.albatross. **Plan 1**

This flood risk assessment has been prepared for a detailed planning application for a change of use of a dwelling which falls under Use Class C3, to the proposed use of the site as a children's care home for up to 3 children, which falls under Use C2. **Plan 2**

Most of the proposed development site is shown to be within an area of Flood Zone 3 “High Probability” as detailed on the Environment Agency's Flood Zone Maps **without defences**, and as defined in Table 1 of Annex 5 NPPF.

Table 1 Annex 5 NPPF: Flood zones (risks from river and sea flooding)

Flood Zone	Definition
Zone 1 Low probability	Land having a less than 0.1% annual probability of river or sea flooding (all land outside Zones 2, 3a and 3b).
Zone 2 Medium probability	Land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of sea flooding (land shown in light blue on the Flood Map for Planning).
Zone 3a High probability	Land having a 1% or greater annual probability of river flooding; or Land having a 0.5% or greater annual probability of sea flooding (land shown in dark blue on the Flood Map for Planning).
Zone 3b Functional floodplain	This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise: - Land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or - Land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding). Local planning authorities should identify in their strategic flood risk assessments areas of functional floodplain and their boundaries accordingly, in agreement with the Environment Agency (not separately distinguished from Zone 3a on the Flood Map).

Applying the Flood Risk Vulnerability Classification in Table 2, Annex 5 NPPF, both the proposed and existing use are classified as “More Vulnerable,” Table 3 Annex 5 NPPF states that such use is permitted in this zone subject to the exception test.

Table 2 Annex 5 NPPF: 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 (including floating/rising designs), 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.

Site Levels

LIDAR 1m DTM Data to OS datum shows that the land levels in the around the building average around 2.90mODN. with the existing floor level 150mm above at 3.05mODN (see photograph). Cranmore Lane at the site entrance is 2.74mODN. **Plan 3**



DESIGN FLOOD

Para 002 PPG states that the design flood for the planning process should be; -

This is a flood event of a given annual flood probability, which is generally taken as:

- river flooding likely to occur with a 1% annual probability (a 1 in 100 chance each year); or
- tidal flooding with a 0.5% annual probability (1 in 200 chance each year); or
- surface water flooding likely to occur with a 1% annual probability (a 1 in 100 chance each year),

plus, an appropriate allowance for climate change.

Paragraph: 002 Reference ID: 7-002-20220825

Revision date: 25 08 2022

DRAINAGE AUTHORITIES

Environment Agency

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

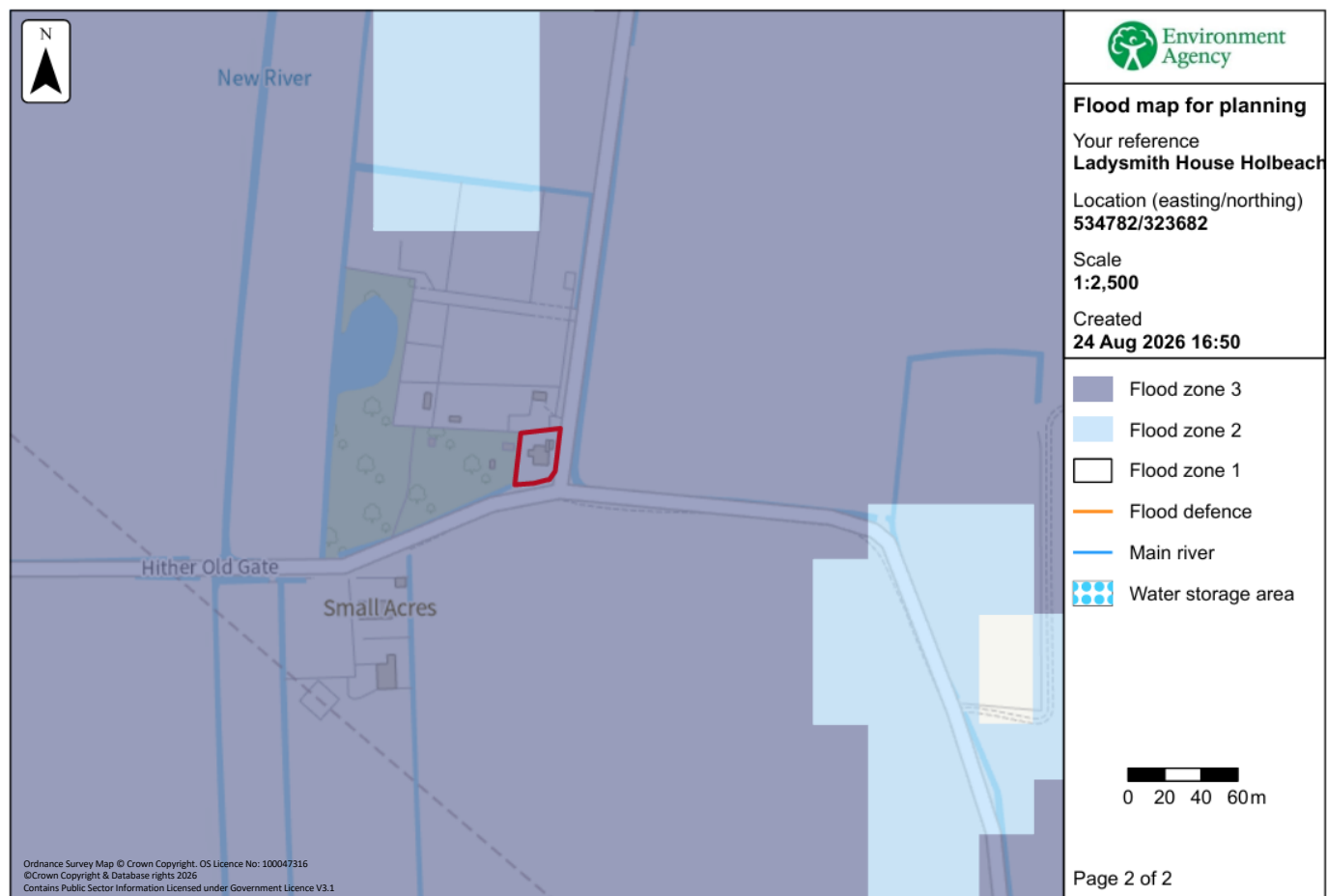
The following potential sources of flooding affecting the development site are.

- The Wash (Tidal)

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. To meet the requirements of the National Planning Policy Framework, these defences are removed in their entirety to produce the Flood Map for Planning (Rivers and Sea). The map therefore shows the full extent of areas that would be at risk of flooding if no defences existed, and water could spread out across the floodplain.

Flood Zones

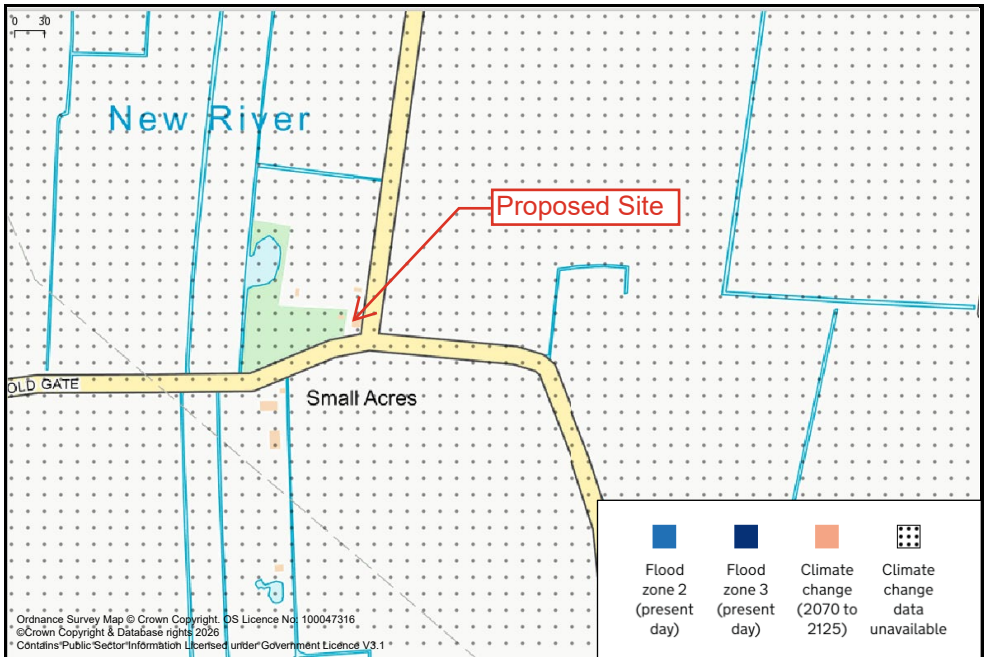
These maps were updated on the 25th March 2025 and show that site is considered to be at some risk from tidal/fluvial flooding as it is located within an area zoned as Flood Zone 3a. The maps indicate that the area would be flooded without flood defences, which are in place, (with an annual probability 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).



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Flood Map for Planning (Source EA)

On the 27 August 2025 the Environment Agency added a new layer on “Flood Map for Planning Flood Zones plus Climate Change”, which shows how the combined extent of Flood Zones 2 and 3 could increase with climate change over the next century. Flood Zone 1 sites that are within the ‘flood zones plus climate change extent should be treated as if they were in Flood Zone 2.

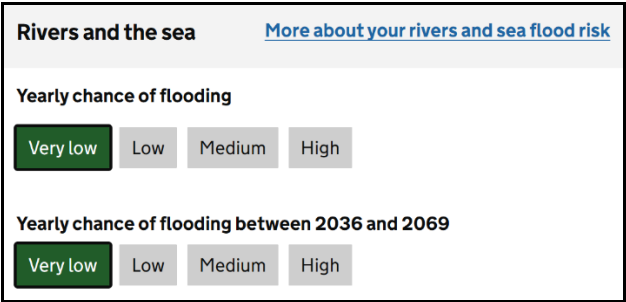


Flood Map for Planning with Climate Change (Source EA)

The Environment Agency does not have at present any published data for climate change for this area. The dataset only provides an estimate of where flooding could occur in the future and when this dataset is available it will be for reference only and not to be used on a standalone basis to inform planning decisions on individual planning application.

Risk of Flooding from Rivers & Sea

The Risk of flooding from Rivers and Sea map was updated in January 2025 and for the present day shows that the site for the new building, to be at a Low chance of flooding. This takes into account 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.





Risk of Flooding from Rivers & Sea Map Present Day (Source EA)



Risk of Flooding from Rivers & Sea Map With Climate Change (Source EA)

Schemes in the Area

There are no capital projects is ongoing to reduce or sustain the current flood risk to this area.

Fluvial Flooding

The site is not considered to be at risk of flooding from Main River.

Tidal Flooding

This site is considered to be at risk from tidal flooding. The existing tidal defences protecting this site consist of earth

embankments. They are in fair condition and reduce the risk of flooding (at the defence) to a 0.67% (1 in 150) chance of occurring in any year. The Environment Agency inspect these defences routinely to ensure potential defects are identified.

Breach Analysis to Welland / The Wash Defences

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 - 2.00 and extreme >2.0 based upon an empirical measure of velocity and depth.

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

Where V = Flood flow velocity (m/sec) D = Flood depth (m)

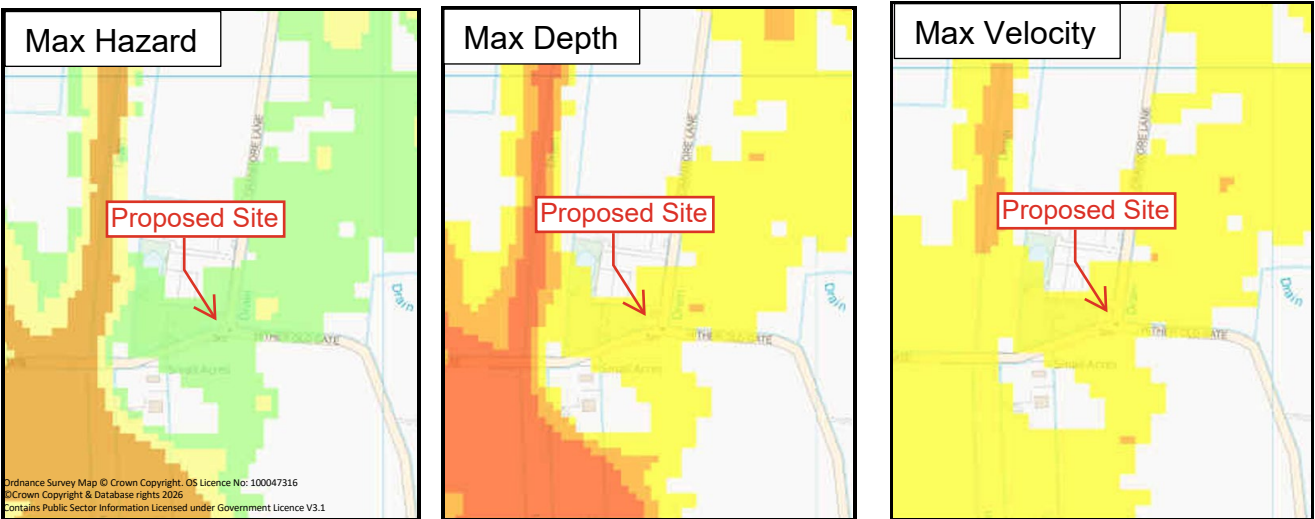
DF = A debris factor included to represent the greater damage, or risk of injury to people, that can occur if debris is swept along with the water. = 0.5 for depths <0.25 or 1.0 for depths.

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

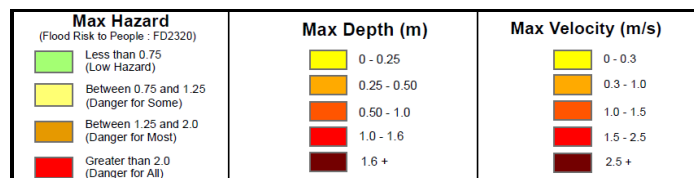
Flood Hazard			Description
	<0.75	Low	Caution – Flood Zone with shallow flowing water or deep standing water.
	0.75 – 1.25	Moderate	Danger for Some - (i.e. children) Danger Flood Zone with deep or fast flowing water.
	1.25 – 2.0	Significant	Danger for Most – Danger Flood Zone with deep fast flowing water.
	>2.0	Extreme	Danger for All – Extreme Danger Flood Zone with deep fast flowing water.

The site is not affected by breaching of the tidal defences for the present day (2006) scenarios.

The Tidal Breach Hazard Maps for Scenario year 2115 for the 1 in 1000-year event show that the site is within a Hazard Rating area Less than 0.75 (Low Hazard), depth 0 – 0.25m and velocity 0 – 0.3m/sec.



Breach Hazard Maps, for Scenario year 2115 Climate Change, for the 1 in 1000-year event.



The Environment Agency has also produced maps based on computer modelling of simulated overtopping of defences along the coastline for specific tidal scenarios. The maps only consider the consequences of overtopping of defences and do not show the possible consequences of breaches of the tidal defences. For future climate change scenarios, it is assumed that the defences remain at 2006 heights.

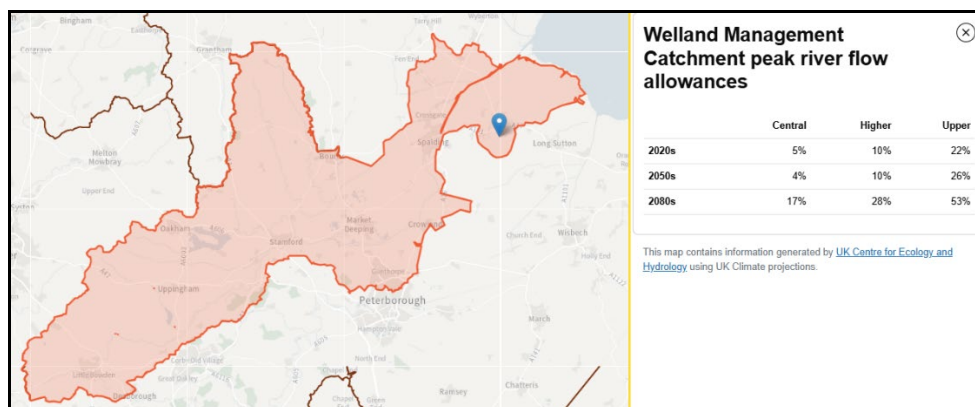
The site is not affected by overtopping for both the present day and for Scenario year 2115.

Climate Change

The site lies within the Welland Catchment within the Anglian River Basin District. Peak River flows should be adjusted to reflect the latest climate change allowances. For sites within this catchment the Central Peak River allowance for the total potential change anticipated for '2080s'. (2070 to 2115) is 21% increase, where as the model has included for a 20% increase.

The updated climate change allowances for the site are as follows

- 17% (central)
- 28% (higher central),
- 53% (upper)



MITIGATION

The proposed change of use for the two-storey dwelling into a children's care homecare home with a Staff sleeping accommodation on the ground floor when needed. The sleeping accommodation for the children is at first floor level.

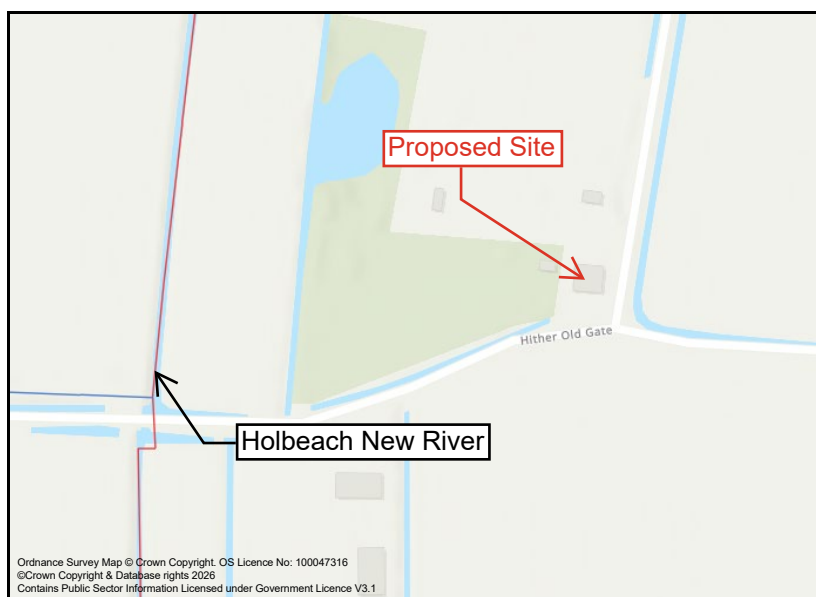
The Environment Agency recommends that appropriate mitigation measures / flood resilience techniques are incorporated in the design of developments in flood risk areas. The application falls under Cell F7 of the South East Lincolnshire Flood Risk Matrix.

This states that appropriate mitigation measures/flood resilience techniques have been incorporated into the development up to the predicted flood level (see Max depth map for the 2115 scenarios).

The depth of flooding shown on the Max Depth Map for the 0.1% 2115 scenario is between 0 – 0.25m, the road level on Cranmore Lane at the site entrance is 2.74mODN, this would generate a max flood level of 2.99mODN. The existing ground floor level for the building is 3.05mODN which is above this level.

SOUTH HOLLAND INTERNAL DRAINAGE BOARD

The proposed development site is located within Board's catchment Little Holland N and the nearest watercourse to the site is Holbeach New River located to the west of the site.



Extract from South Holland IDB Drainage Map

The Board have a minimum standard of 1 in year's level of protection for the rural areas. The Board have confirmed that where catchments serve a mixture of rural and urban areas the standard is usually in excess of this level of service and increases to 1 in 50 years level in more urban catchments.

The Board's prior written consent will be required for any of the following works:

- No person without the previous consent of the Board shall erect any building or structure, whether temporary or permanent, or plant any tree, shrub, willow, or other similar growth within 9 metres of the landward toe of the bank where there is an embankment or wall or within 9 metres of the top of the batter where there is no embankment or wall, or where the watercourse is enclosed within 9 metres of the enclosing structure.
- No person shall, without the previous consent of the Board, for any purpose, by means of any channel, siphon, pipeline, or sluice or by any other means whatsoever, introduce any water into the District or, whether directly or indirectly, increase the flow or volume of water in any watercourse in the District.

- The erection or alteration of any mill dam, weir or other like obstruction to the flow, or erection or alteration of any culvert within the channel of a riparian watercourse.

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. It is concluded that flooding from this source is limited to minor isolated cases and is not of strategic significance as regards to flood risk.
- Groundwater flooding occurs when groundwater levels increase sufficiently for the water table to intersect the ground surface. Groundwater flooding can occur in a variety of geological settings including valleys, in areas underlain by chalk, and in river valleys with thick deposits of alluvium and river gravels. Groundwater flooding can be disregarded as a significant flood risk in this area.
- Flooding from sewers can occur from overloading from heavy rainfall caused by blockages or having inadequate capacity. There are public sewers close to the site which are well maintained by Anglian Water Ltd. Flooding from sewers can be disregarded as a significant flood risk in this area
- 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.

Reservoirs

The EA has prepared reservoir failure flood risk mapping to show the largest area that might be flooded if a reservoir were to fail and release the water it holds. The mapping displays two scenarios as follows:

- Dry this is the extent when the river levels are normal,
- Wet this is the extent when there is also flooding from rivers.

The mapping displays a worst-case scenario and is only intended as a guide. The site is shown to be at no risk of flooding due to the failure of a large, raised reservoir in both the dry and wet day scenarios. All large reservoirs must be inspected and supervised by reservoir panel engineers as detailed by the enforcement authority for the Reservoirs Act 1975 in England. The EA are responsible to ensure that reservoirs are inspected regularly, and essential safety work is carried out. As such, the risk of flooding from this source is relatively low.

Canals and or Artificial Water Bodies.

The site is not at risk of flooding from canals and or Artificial Water Bodies.

RESIDUAL RISKS

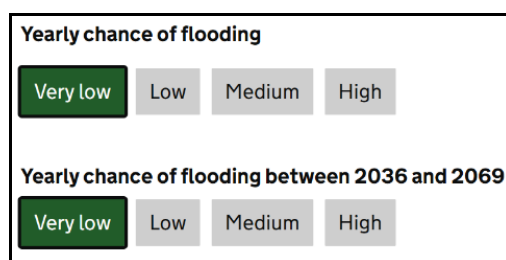
There is always a possibility of a flood more than that allowed for which might conceivably cause some flooding to the property. However, such an event would have a very low probability and the risk of flooding to the property would be extremely small. It is therefore considered that the residual risks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

HISTORIC FLOODING

The site is not shown on the historic flood map to have been affected by previous flood events.

SURFACE WATER FLOODING

On 28th May 2026 the Environment Agency added surface water climate change extents and banded depth layers to the Flood Map for Planning. the climate change scenario map shows, that the site is at a very Low risk from surface water flooding for both the present day and with climate change.



The maps for surface water and the maps for river and sea flooding define the risk as High, Medium, Low and Very Low. The chance of flooding for the area defined in any given year is shown below:

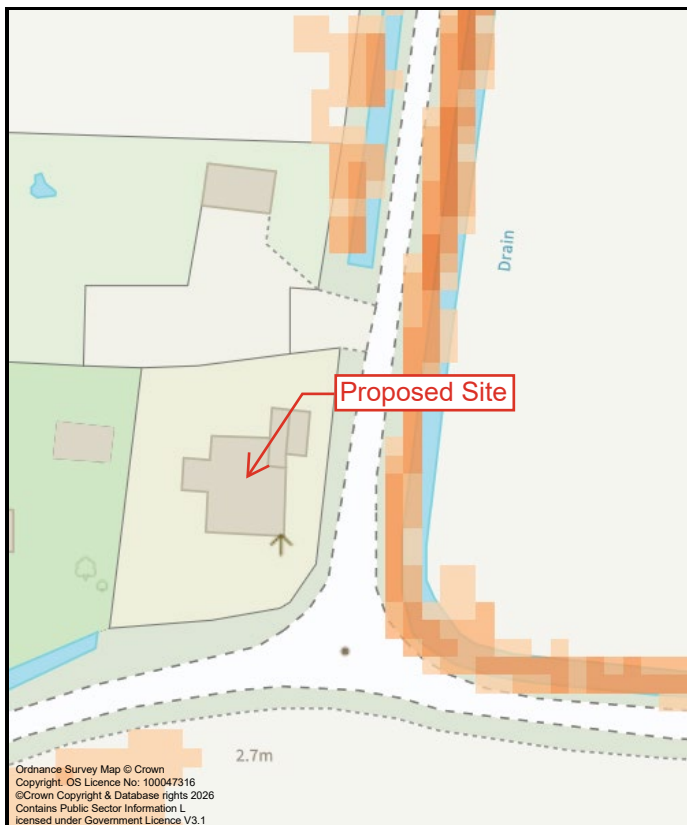
- **High:** greater than 1 in 30 (3.3%).
- **Medium:** between 1 in 100 (1%) and 1 in 30 (3.3%).
- **Low:** between 1 in 1000 (0.1%) and 1 in 100 (1%).
- **Very Low:** less than 1 in 1000 (0.1%)

The RoFSW products are an assessment of where surface water flooding may occur when rainwater does not drain away through the normal drainage systems or soak into the ground but lies on or flows over the ground instead. It includes information about flooding extents and depths.

Surface water information tells you the flood risk of the land around a building and cannot tell you if individual buildings are at risk. A near-term epoch (2040 – 2060 “2050s” epoch) and central allowances are being used initially, to support short and medium-term decisions informed by the highest flood likelihood projections.



**Risk of flooding From Surface Water Map
1 in 100year Present Day (Source EA).**



**Risk of flooding From Surface Water Map
1 in 100year 2061 - 2125 (Source EA).**

SEQUENTIAL APPROACH

When applying the sequential approach for flood risk in accordance NPPF the site of the development would fall into Flood Zone 3 (High Probability) as the site is shown to be within the tidal/fluviat 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 3 Annex 5 NPPF, both the existing and the proposed use is classified as, "More Vulnerable" with Table 3 Annex 5 NPPF stating that such uses are appropriate in this zone.

Table 3 Annex 5 NPPF: Flood Risk Vulnerability and Flood Zone 'Incompatibility'

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	✓	✗	✗	✗

CLIMATE CHANGE

Global warming is now recognised that it is likely to affect the frequency and severity of extreme events for both tidal and fluvial flooding. The Climate change allowances in the NPPF Guidance were updated, for sea level rise on the 17 December 2019, the peak river flows on the 20th of July 2021 and peak rainfall allowances 10th of May 2022. For flood risk assessments use the Management Catchment Climate Changes for the peak river flow map. Management catchments are sub-catchments of River Basin Districts.

The site is located within the Welland Management Catchment within the Anglian River Basin District, for sites within Flood Zone 2 or 3a and for "More Vulnerable" land uses, the Central allowances figures, in the Table below, should be used.

Peak River flow allowances within the Management Catchment Allowances				
River Basin District /Management Catchment	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/ Welland	Upper End	22%	26%	53%
	Higher Central	10%	10%	28%
	Central	5%	4%	17%

The effect of global warming on peak rainfall allowances is given in Table 1.

Table 1 Peak Rainfall Intensity

Table 1 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 2

Table 2 Peak Sea Level Rise

Table 2 Peak Sea level allowance for each epoch in (mm) per year with cumulative sea level rise for each epoch in brackets (use 1981 to 2000 baseline)						
Area of England) (Use River Basin	Allowance	2000 to 2035	2036 to 2065	2066 to 2095	2096 to 2125	Cumulative Rise 2000 to 2125 (m)
Anglian	Higher Central	5.8 (203mm)	8.7 (261mm)	11.6 (348mm)	13 (390mm)	1.20m
Anglian	Upper End	7 (245mm)	11.3 (339mm)	15.8 (474mm)	18.1 (543mm)	1.6m

DRAINAGE STATEMENT

Surface Water Drainage

The development proposal is for a change of use of an existing building, with no increase to the building footprint. In this case the existing surface water drainage system should be suitable for continued use. The drainage proposal is to utilise existing surface water connections serving the existing building which have operated for many years without creating any problems.

Foul Water Drainage

Government guidance contained within the National Planning Practice Guidance (Water supply, wastewater and water quality – considerations for planning applications, paragraph 20) sets out a hierarchy of drainage options that must be considered and discounted in the following order:

1. Connection to the public sewer
2. Package sewage treatment plant (adopted in due course by the sewerage company or owned and operated under a new appointment or variation)
3. Septic Tank

The development proposal is a renovation of the existing building, with no increase to the building footprint. In this case the existing surface water drainage system should be suitable for continued use. The drainage proposal is to utilise existing foul water connections and treatment facilities serving the existing building which have operated for many years without creating any problems.

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

FLOOD RESILIENCE CONSTRUCTION

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 development will have the following resilient measures incorporated in the construction, in accordance with “Improving the flood performance of new buildings” CLG (2007).

- Any existing wall vents are to be replaced with self-sealing air bricks manufactured by ‘Storm Meister’ or other approved, 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.
- The site is in an area that can receive flood warnings from the Environment Agency Floodline Warning Direct system. It is recommended that the property Owner contact the Environment Agency’s Floodline on 0345 988 1188 to register the property to receive advance warning 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

- The property is constructed within the area shown on the Environment Agency Flood Map (without defences) to be in Flood Zone 3, which is the highest risk, within Table 1 Annex 5 NPPF, and the vulnerability class for both the existing and the proposed change of use is shown in Table 2 Annex 5 NPPF as ‘More Vulnerable’.
- The long-term flood risk maps for the site show that it is at a low risk of flooding from rivers and sea and at no risk from surface water flooding, no risk from ground water and not affected by a reservoir failure.
- The ground floor level for the change of use is above the 0.1% 2115 flood level for the site.
- Any impact of damage to the development proposals can be foreseen and mitigated against by relatively simple design and construction techniques. They will be constructed using materials which are flood resilient construction as outlined in the report.
- Flooding from other sources is unlikely to affect the site.
- There are no local, site-specific risks that would adversely affect the site’s flood risk categorisation. The development is not expected to increase off-site flood risk. The site is therefore suitable for the proposed development.
- It is therefore concluded that the proposed change of use is safely and sustainably, to meet the requirements of the South Holland District Council Development Plan Policies, and the National Planning Policy Framework.