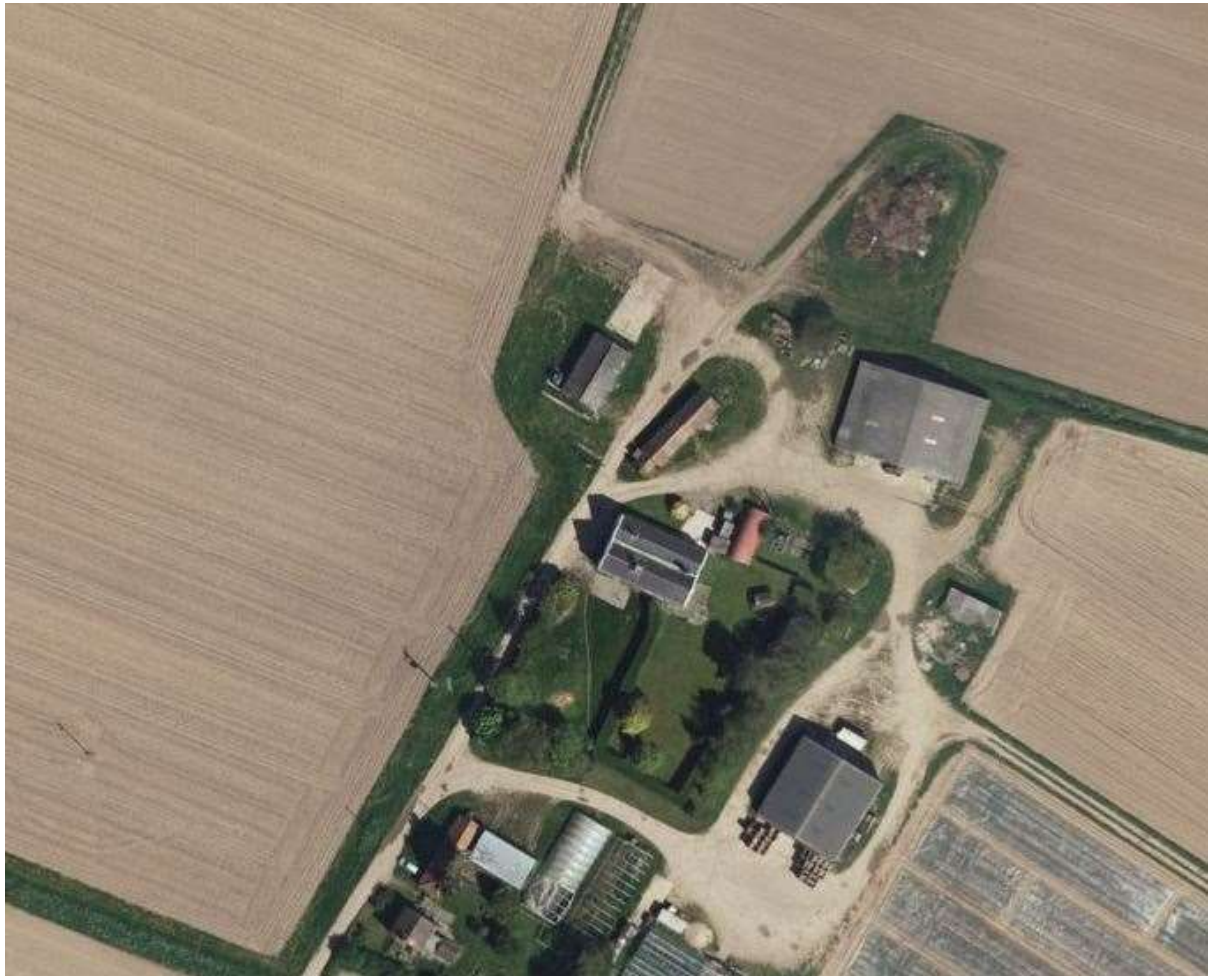


Flood Risk Assessment



Site:

White Loaf Hall Farm, White Hall Loaf Lane, Butterwick, Boston

Applicant:

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Revision:

A01 – September 2021

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INTRODUCTION

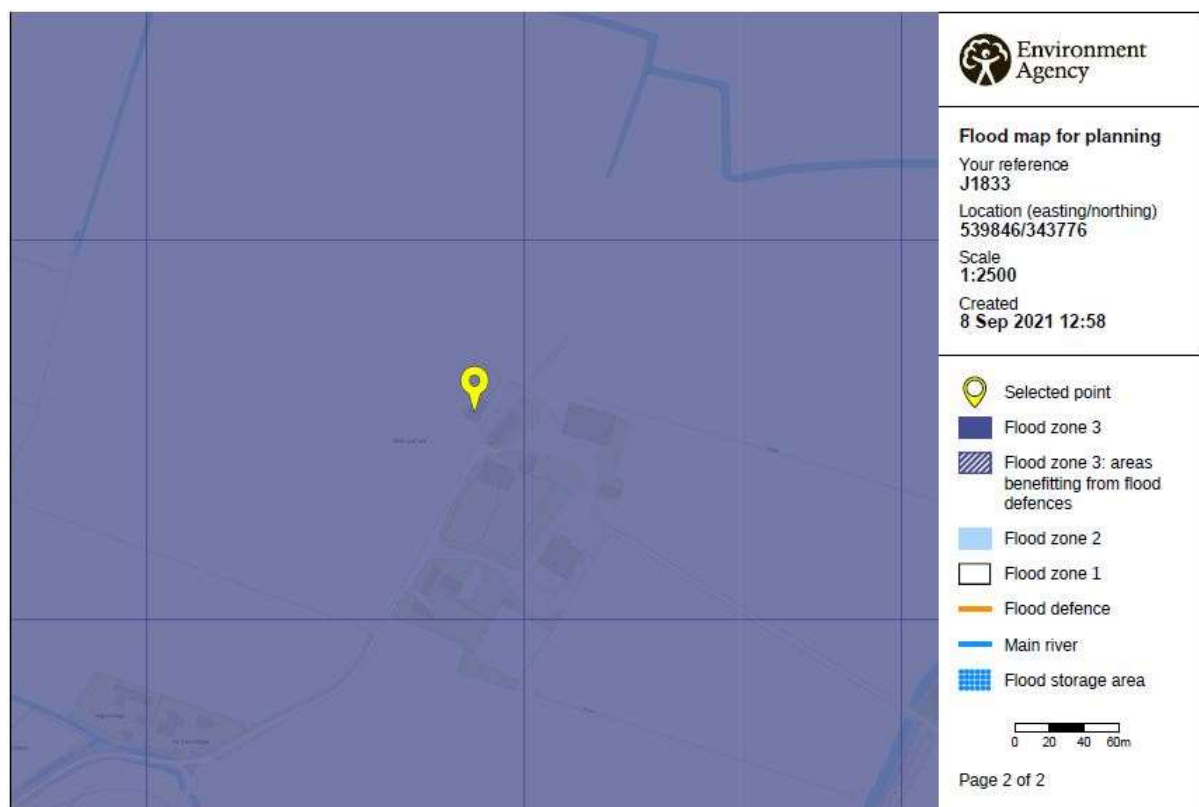
This is a Flood Risk Assessment to accompany a planning application for the above proposed site. The requirement for the flood risk assessment is based on the whole of the site being contained within a Flood Zone 3. The approach to flood risk is set out in the National Planning Policy Framework (NPPF), refer to Appendix A with more local planning policy set out in Policy 4 of the South East Lincolnshire Local Plan (SELLP), refer to Appendix B. This Flood Risk Assessment assesses the site in accordance with the policy requirements of the NPPF and SELLP.

FINDINGS

RISK OF FLOODING FROM RIVERS AND SEAS

Flood Zone

The site is wholly contained within a Flood Zone 3 and is at risk of flooding from an event exceeding 1% flood chance.



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Figure 1: Flood zone map (the site is marked with a yellow marker).

Historic Flooding

There is no record of the site having flooded according to Environment Agency records, refer to Appendix C.

Sequential & Exception Test

The proposed use for the building is residential and is undergoing a change of use from agricultural. The proposal will result in a new dwelling on the site and the proposal would be for a two-storey dwelling. Therefore, flood risk is considered on this basis.

The residential use is classified as “more vulnerable” and the agricultural use is classified as “less vulnerable” in accordance with Table 2 – Flood Risk Vulnerability Classification. Based on the change of use there is an increase in flood risk.

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓*

Key:

✓ Development is appropriate

X Development should not be permitted.

Figure 2 – Table 3 – Flood Risk Vulnerability and Flood Zone Compatibility (www.gov.uk)

In accordance with Table 3 where a site is located in a Flood Zone 3a with a vulnerability classification of “more vulnerable” development is not considered to be compatible without the sequential or exception test being required to demonstrate the suitability of the land.

However, the application is for a Change of Use and accordingly no sequential test is required. Nonetheless some consideration is necessary to the exception test and making the development as safe as practicably as possible.

Site Levels

No topographical survey had been undertaken to inform this FRA. The site is part of a wider landscape of fenland that is characterised as low-lying flat land albeit the land in this area rises to 3-4mAODN. OS maps show that levels on Shore Road near to the site are approximately +3mAODN.

Fluvial Flood Sources

There are no fluvial sources of flooding that affect the site.

Tidal Flood Sources

The site is at risk from tidal sources of flooding. The existing tidal defences protecting this site consist of earth embankments which are supplemented by saltmarsh to maintain foreshore levels.

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 site is at risk from overtopping and breaches of the defences in the current day and climate change scenarios.

Calculating the Flood Level

Where possible all habitable floors should be above the 1 in 200-year flood level plus climate change where the accommodation is proposed to be two storey. In the case where a single storey building is proposed habitable floors should be above the 1 in 1000-year flood level. In both cases a safe point of refuge can be established and therefore provide protection to the habitants of the building.

In this case it is proposed to create a two-storey dwelling. To determine the 1 in 200-year flood level both tidal and fluvial sources will be looked at to determine the worst case and therefore an appropriate floor level.

Data from the Environment Agency includes Hazard mapping from the potential tidal sources, refer to Appendix C.

Tidal Flood Level

The Hazard mapping for the site for 1:200-year event including climate change (2115) shows flood levels on the site where the building is to be located on land that would flood to a depth of 1.0m-1.6m with a velocity of between 0-0.3m/s creating a hazard classified as "Danger for Most".

Standing Advice from the Environment Agency allows development for minor development with a hazard rating of "Danger for Most" subject to appropriate mitigation.

Floor Levels

Standing advice requires finished floor levels (FFL) to be informed by the predicted flood depth maps (refer to the relevant 2115 1% fluvial or 0.5% tidal Max Depth Map) and set as required below (single storey proposals must use the 0.1% event, 2115 scenario, for setting FFLs):

Depths of 1-1.6m

Proposals must have a minimum of 2 storeys, with FFL set a minimum of 1m above existing ground level, flood resilient construction to a height 300mm above the predicted flood depth, and demountable defences to 600mm above FFL.

Depths of >1.6m

It is unlikely that mitigation measures would prevent flood water from entering the building at ground floor level. Therefore, proposals must have a minimum of 2 storeys with no ground floor habitable accommodation. The first floor living accommodation must be above the highest predicted flood depth.

The proposed building has a predicted flood depth of between 1.0m–1.6m. Therefore, all habitable accommodation will be above 1.0m with flood resilient construction to a height 300mm above the predicted flood depth, and demountable defences to 600mm above FFL.

RISK OF FLOODING FROM SURFACE WATER

The risk of flooding from surface water is very low. The following map shows the Environment Agency's Risk of Flooding from Surface Water map:



Figure 3: Surface Water Flood Map (www.gov.uk)

No further action is required.

RISK OF FLOODING FROM RESERVOIRS

The risk of flooding from reservoirs is low. The following map shows this on the Environment Agency's Risk of Flooding from Reservoirs map:



Figure 4: Reservoir Flood Map (www.gov.uk)

No further action is required.

RISK OF FLOODING FROM SEWERS

It is not known if there are any existing surface water and foul water sewers that currently exist on the site. All new infrastructures to service the building shall be appropriately designed to the relevant standards to ensure failures do not present a problem.

SAFE ACCESS & EGRESS

The proposed first floor is above the calculated 1 in 200-year flood level, as such it will provide a safe refuge for the dwelling. It may not be possible to access or egress the site during times of extreme tidal flooding.

CONCLUSION

The site is contained wholly within a Flood Zone 3.

The site is protected by adequate tidal flood defences which are maintained by the Environment Agency. These currently are in fair condition and provide a 1 in 150 year standard of protection. The site is at risk from overtopping in the climate change scenario. A residual risk to the site exists from breaching in both the current and climate day scenario.

The change of use from agricultural use to residential use falls within "more vulnerable" uses of land in Table 2 Flood Risk Vulnerability Classification and Table 3 shows that developments of this nature are appropriate in flood zone 3a subject to passing the Sequential and Exception Test. A change of use does not require a Sequential Test and therefore the development should be made as safe as practicably possible in accordance with the Exception Test.

The calculated flood level 1:200-year flood level including allowances for climate change is between +1.0m-1.6m above the existing site ground level. On this basis the property will be two storeys with all habitable accommodation to be set at +1.00m above the existing ground level in accordance with EA standing advice.

Flood resilient construction is to be used to a height 300mm above the predicted flood depth and demountable defences to 600mm above FFL are to be installed.

At the detailed design stage of the development advice contained in "Improving the Flood Performance of New Buildings - Flood Resilient Construction" should be followed.

Further to this the property will register to Floodline to receive advance warning of potential flooding.

New foul and surface water drains will be designed to the relevant standards.

APPENDICES

APPENDIX A – NATIONAL PLANNING POLICY FRAMEWORK

PLANNING AND FLOOD RISK

155. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.
156. Strategic policies should be informed by a strategic flood risk assessment, and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards.
157. All plans should apply a sequential, risk-based approach to the location of development—taking into account the current and future impacts of climate change⁴⁹ Except for applications for the repowering of existing wind turbines, a proposed wind energy development involving one or more turbines should not be considered acceptable unless it is in an area identified as suitable for wind energy development in the development plan; and, following consultation, it can be demonstrated that the planning impacts identified by the affected local community have been fully addressed and the proposal has their backing so as to avoid, where possible, flood risk to people and property. They should do this, and manage any residual risk, by:
- a) applying the sequential test and then, if necessary, the exception test as set out below;
 - b) safeguarding land from development that is required, or likely to be required, for current or future flood management;
 - c) using opportunities provided by new development to reduce the causes and impacts of flooding (where appropriate through the use of natural flood management techniques); and
 - d) where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development, including housing, to more sustainable locations.
158. The aim of the sequential test is to steer new development to areas with the lowest risk of flooding. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk

assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding.

159. If it is not possible for development to be located in zones with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in national planning guidance.
160. The application of the exception test should be informed by a strategic or site-specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. For the exception test to be passed it should be demonstrated that:
 - a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and
 - b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.
161. Both elements of the exception test should be satisfied for development to be allocated or permitted.
162. Where planning applications come forward on sites allocated in the development plan through the sequential test, applicants need not apply the sequential test again. However, the exception test may need to be reapplied if relevant aspects of the proposal had not been considered when the test was applied at the plan-making stage, or if more recent information about existing or potential flood risk should be taken into account.
163. When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment⁵⁰. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:
 - a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;
 - b) the development is appropriately flood resistant and resilient;
 - c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;

- d) any residual risk can be safely managed; and
- e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.

164. Applications for some minor development and changes of use⁵¹ should not be subject to the sequential or exception tests but should still meet the requirements for site-specific flood risk assessments set out in footnote 50.

165. Major developments should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate. The systems used should:

- a) take account of advice from the lead local flood authority;
- b) have appropriate proposed minimum operational standards;
- c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development; and
- d) where possible, provide multifunctional benefits.

APPENDIX B – SOUTH EAST LINCOLNSHIRE LOCAL PLAN

POLICY 4: APPROACH TO FLOOD RISK

Development proposed within an area at risk of flooding (Flood Zones 2 and 3 of the Environment Agency's flood map or at risk during a breach or overtopping scenario as shown on the flood hazard and depths maps in the Strategic Flood Risk Assessment) will be permitted, where:

1. It can be demonstrated that there are no other sites available at a lower risk of flooding (i.e. that the sequential test is passed). The sequential test will be based on a Borough or District wide search area of alternative sites within the defined settlement boundaries, unless local circumstances relating to the catchment area for the development justify a reduced search area, i.e. there is a specific need for the development in that location. The sequential test is not required for sites allocated in the Local Plan, minor development or change of use (except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site).
2. It can be demonstrated that essential infrastructure in FZ3a & FZ3b, highly vulnerable development in FZ2 and more vulnerable development in FZ3 provide wider sustainability benefits to the community that outweigh flood risk.
3. The application is supported with a site-specific flood risk assessment, covering risk from all sources of flooding including the impacts of climate change and which:
 - a) demonstrate that the vulnerability of the proposed use is compatible with the flood zone;
 - b) identify the relevant predicted flood risk (breach/overtopping) level, and mitigation measures that demonstrate how the development will be made safe and that occupants will be protected from flooding from any source;
 - c) propose appropriate flood resistance and resilience measures (following the guidance outlined in the Strategic Flood Risk Assessment), maximising the use of passive resistance measures (measures that do not require human intervention to be deployed), to ensure the development maintains an appropriate level of safety for its lifetime;
 - d) include appropriate flood warning and evacuation procedures where necessary (referring to the County's evacuation routes plan), which have been undertaken in consultation with the authority's emergency planning staff;
 - e) incorporates the use of Sustainable Drainage Systems (SuDS) (unless it is demonstrated that this is not technically feasible) and confirms how these will be maintained/managed for the lifetime of development (surface water connections to the public sewerage network will only be permitted in exceptional circumstances where it is demonstrated that there are no feasible alternatives);
 - f) demonstrates that the proposal will not increase risk elsewhere and that opportunities through layout, form of development and green infrastructure

have been considered as a way of providing flood betterment and reducing flood risk overall;

- g) demonstrates that adequate foul water treatment and disposal already exists or can be provided in time to serve the development;
- h) ensures suitable access is safeguarded for the maintenance of water resources, drainage and flood risk management infrastructure.

Development in all flood zones, and development over 1 hectare in size in Flood Zone 1, will need to demonstrate that surface water from the development can be managed and will not increase the risk of flooding to third parties.

Change of use of existing buildings will be supported providing they do not pose an increase in risk to people. Change of use that would result in self-contained ground floor residential accommodation in areas of hazard rating 'danger for some', 'danger for most' and 'danger for all' will not be supported. In these areas unrestricted access to a habitable room above the flood level and an emergency evacuation plan will be required.

Caravans, mobile homes and park homes intended for permanent residential use will not be permitted in areas at risk of flooding. Caravan, chalet, log cabin, camping and touring sites at risk of fluvial flooding where there is a 'danger for most' and 'danger for all' will not be permitted. Occupancy of caravan, chalet, log cabin, camping and touring sites at risk of tidal flooding will not be permitted to open between 1st November in any one year and the 14th March in the succeeding year.

No development will be permitted within a 50m buffer from the toe of the raised Witham Haven Banks (flood defences), as shown on the indicative Plan contained in Appendix 10, to allow access for construction and maintenance.

Flood risk management infrastructure shall be provided at the strategic level, where development opportunities allow, to reduce the hazard and probability of flooding.

APPENDIX C – ENVIRONMENT AGENCY DATA