FLOOD RISK ASSESSMENT

Proposed erection of 5no dwellings (previous extant approval for 1no dwelling)

Land between Seagate Road and Wisbech Road, Long Sutton

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CONTENTS

DOCUMENT HISTORY

ISSUE NO	COMMENTS	DATE
1	Planning	25.11.24
2	Planning	07.01.25

1 INTRODUCTION

1.1 This Flood Risk Assessment (FRA) has been prepared to accompany a Full Planning application for a proposed residential development at land to east of Seagate Road, Long Sutton, Spalding, Lincolnshire.

1.2 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 course of action seeks to reduce the future damage to property and risk to life resulting from incidents of flooding. National Planning Policy does not prevent all development in flood risk areas as this would be unsustainable and result in economic stagnation, depriving existing communities of much needed homes, services, employment opportunities etc. It is in the essential interests of the vitality of settlements and for the wider economic and social wellbeing of the community, that development opportunities are not unnecessarily constrained. Accordingly, the aims of this site-specific FRA will be as follows:

- Identify and address flood risk issues associated with the development.
- Assess if the project is likely to be affected by flooding from all relevant sources both now and in the future.
- Demonstrate that the project is safe and where possible, reduces flood risk.
- Propose measures to deal with the identified effects and risks.

2 SITE LOCATION

2.1 The site forms part of a wider development site which received outline planning permission for up to 215 dwelling in 2019. Subsequently a full planning application was submitted for the 9 plots which front on Seagate Road and reserved matters for 171 dwellings on the remainder of the land.

2.2 The site comprises Plot 1 as approved under application H11-0882-21 and an area of land which was identified for SUDs as part of the drainage strategy for the reserved Matters application but subsequently was not required for this purpose, as such this area of land is not currently being utilised.

2.3 As part of approved development, the site has been stripped and is being used as compound and/or the storage of materials, see Figure 1.

2.4 The site is located within Flood Zone 3a (See Figure 2). The Flood Map indicates the area at risk of flooding, assuming no flood defences exist, for a flood 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 with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater.

2.5 The site is within a defended flood plain, as defined in Appendix 1 of the Environment Agency's "Policy and Practice for the Protection of Flood Plains", which is considered to be passive until such time that a flood greater than the defences can withstand occurs. The likelihood of flooding occurring due to overtopping or failures of the defences is considered to be very low.

Figure 1- Aerial photograph showing the location of the site

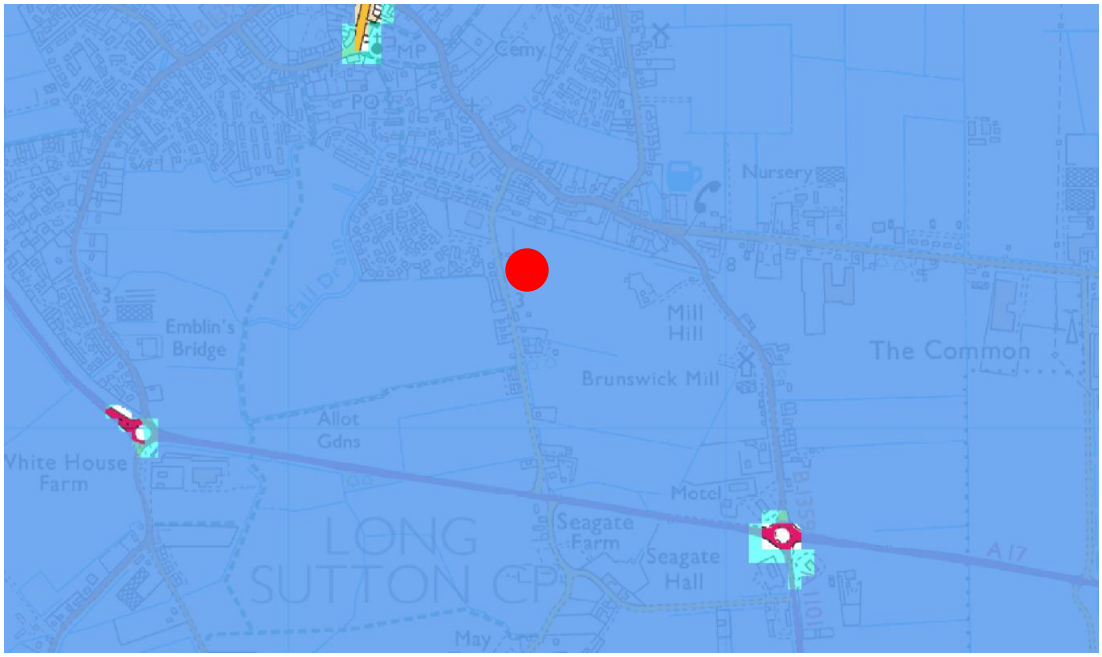

Figure 2- Extract from Flood Map showing the site located in flood Zone 3A

3 HISTORY OF FLOODING

3.1 The Environment Agency has advised that there are no records of flooding in this area. It is possible recent flooding may have occurred, but they have no information relating to this. No evidence has been discovered of the site or any adjoining properties having been flooded in the past.

4 PROPOSED SCHEME

4.1 The proposed development involves the erection of 5no detached 1 storey dwellings.

5 SEQUENTIAL & EXCEPTIONS TESTS

5.1 Within the National Planning Policy Framework (NPPF) and its accompanying Planning Practice Guidance (PPG) there is an expectation that proposals within the flood zone should be subject to the Sequential Test, and if necessary, the Exception Test at the planning application stage. The Guidance provides advice to Local Planning Authorities (LPA's) to ensure the effective implementation of the planning policy set out in the NPPF on development in areas at risk of flooding. It states that the overall aim should be to steer new development to Flood Zone 1 but adds that where there are no reasonably available sites in Flood Zone 1, LPA's allocating land in local plans or determining planning applications for development at any particular location should take into account the flood risk vulnerability of land uses (as set out in Table 2 of the document) and consider reasonably available sites in Flood Zone 2, applying the Exception Test if required.

5.8 Both the sequential and exception tests have been demonstrated as part of the sites extant outline and reserved matters approvals. It is therefore considered that both tests are also passed for this application.

6 ASSESSMENT OF POTENTIAL SOURCES OF FLOODING AND MITIGATION MEASURES

6.0 This section presents an assessment of Flood Risk to the development from external sources;

TABLE 1: POSSIBLE FLOODING MECHANISMS		
Source	**Significant?**	**Comment**
Fluvial	Low	Distance form water courses
Tidal/Coastal	Low	If a breach of the defences occurs
Pluvial (drainage)	No	On site run off
Groundwater	Low	Unlikely due to local drainage network
Overland flow	Low	No higher ground adjacent to the site
Blockage	Low	No culverts or bridges close to the site
Infrastructure failure	Low	No major infrastructure has been identified
Rainfall ponding	No	No depressed areas which could encourage ponding.

A) Assessment of Flood Risk to Development from External Sources

6.1 Assessment of Flood Risk from Fluvial/Tidal Sources

6.1.1 The west bank of the River Nene is approximately 4.4 km east of the site of the proposed development, and the Wash Banks are 10km north of the site at their nearest point. The hazard from the River Nene east of the development site if a breach occurred in the length of bank between the South Holland Main Drain Outfall and the A17 bridge will be considered to be the major risk to the site.

6.1.2 The maps supplied by the Environment Agency predict flood depths for certain tidal breach hazard events. Table 2 summaries the risks. The most relevant hazards shown on Table 2 are the Breach Event for the year 2115 0.5% Breach and 0.1% scenarios (highlighted in red). Given the existing topography the hazard and depth of flooding varies across the site.

TABLE 2: SUMMARY OF HAZARD MAPS			
Breach Scenario	**Hazard Rating**	**Max Depth (m)**	**Max Velocity (m/s)**
Year 2006, 1 in 200 (0.5%)	'Low Hazard'	n/a	n/a
Year 2006, 1 in 1000 (0.1%)	'Danger for Some' (Part of site)	0.0– 0.25 (Part of site)	0.0– 0.30 (Part of site)
Year 2115, 1 in 200 (0.5%)	'Low Hazard' 'Danger for Some' 'Danger for Most'	0.0– 0.25 0.25– 0.50 0.50 – 1.00	0.0– 0.30 0.3 – 1.0
Year 2115, 1 in 1000 (0.1%)	''Low Hazard' 'Danger for Some' 'Danger for Most'	0.0– 0.25 0.25– 0.50 0.50 – 1.00	0.0– 0.30 0.3 – 1.0

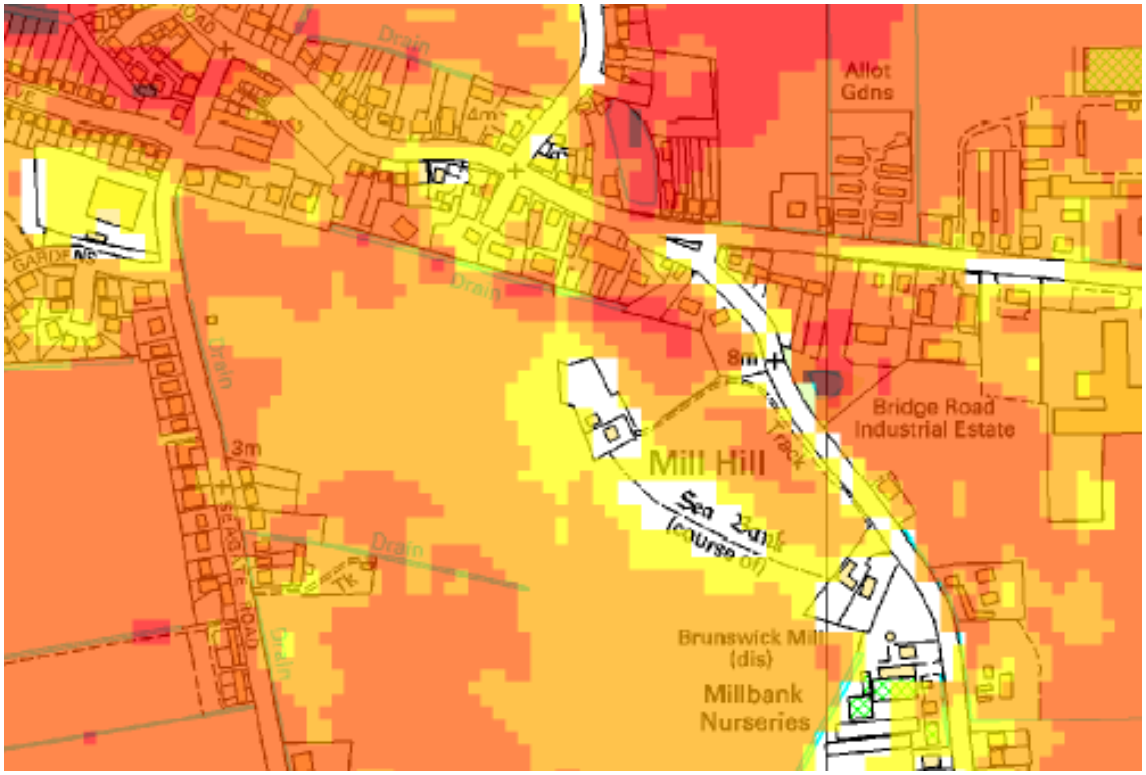

Figure 3- Extract from the 0.5% (1 in 200) Breach Hazard Map showing the majority of the site being within the 0.25-0.5m depth with the western edge being in 0.5-1.0m depth

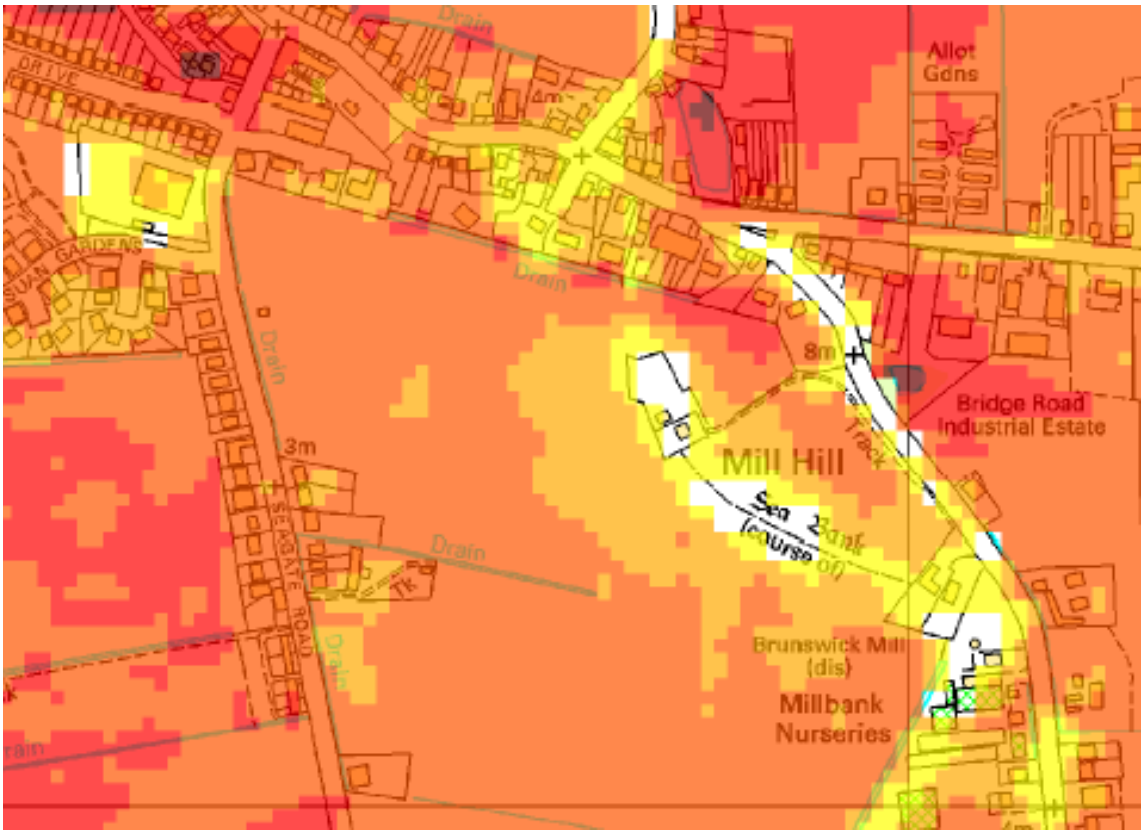

Figure 4- Figure 3- Extract from the 0.1% (1 in 1000) Breach Hazard Map showing the majority of the site being within the 0.5-1.0m depth with the central area being in 0.25-0.5m depth

6.1.3 It is likely that this flood water will take at least 24 hours to reach the site, during which time residents will have been warned of the eventuality. The EA breach mapping also assumes no attempt is made to immediately repair the breach. It is also likely that the EA will undertake further bank raising within the next 100 years to ensure that there is a continuing 1 in 200 year defence to Long Sutton and Sutton Bridge.

6.1.4 The Hazard Maps are based on computer modelling of simulated breaches at specific locations. Although these maps show a theoretical risk of flooding to the site should a breach occur, they do not consider the likelihood of a breach occurring. The likelihood of a breach occurring will depend on several factors, including the construction and condition of the defences in the area. It is understood that the tidal defences protecting this site consist of earth embankments on the Tidal Haven and earth

embankments which are supplemented by saltmarsh on the coast to maintain foreshore levels. The Environment Agency have advised that these defences are in good condition and reduce the risk of flooding to a 0.67% (1 in 150) chance of occurring in any year. The defences are inspected routinely to ensure potential defects are identified.

6.1.5 With the condition and maintenance of the defences in mind, it is considered that the likelihood of them breaching is low. However, mitigation measures (discussed later in Section 6.7) should still be considered.

6.2 Assessment of Flood Risk from Overland Flow (Pluvial)

6.2.1 The Environment Agency Surface Water Flood Map shows that there is a small area of the site at risk of surface water flooding varying from Low Risk to High Risk.

6.3 Assessment of Flood Risk from Ground Water

6.3.1 The area surrounding the site is not known to suffer from ground water problems.

6.4 Assessment of Flood Risk from Reservoirs

6.4.1 The Environment Agency Risk of Flooding from Reservoirs Map shows the site is not at risk from reservoir flooding.

B) Potential of the Proposed Development to Cause Flood Risk Elsewhere

6.5 In order to mitigate flood risk posed from the site post development adequate control measures have been considered for the site. In accordance with recognised guidance there is a hierarchy of surface water from new development should be discharges. This should be as follows

- Infiltration
- Water course
- Public sewer

6.6 The BGS mapping shows the geology is formed of clay and it is therefore assumed that infiltration drainage is not possible and that currently the site drains to the water course on the eastern boundary. It is therefore proposed that this process is replicated and the surface water from the hard surfacing be discharged to this water course at an agreed rate via an onsite SUDs attenuation scheme. A surface water drainage strategy has been prepared to accompany this assessment.

MITIGATION MEASURES

6.7 The NPPF requires that a precautionary approach is adopted to ensure that development is safe and not exposed unnecessarily to flooding. Previous advice from the Environment Agency for similar sites states that 1 storey dwellings should use the 0.1% (1 in 1000) Breach Mapping. The following mitigation measures should therefore be incorporated into the development;

- **Finished Floor Level (FFL) the dwellings to be set a minimum of 1m above existing ground level.**
- Flood resilient construction should be incorporated to a minimum height of 300mm above the predicted flood level, and all of the electrical installation should be a similar height above finished floor level.
- Avoid the use of plasterboard and gypsum plaster and use water resistant cement render or lime mortar, or fix the plasterboard horizontally to the ground floor walls.
- Avoid the use of absorbent cavity insulation to the ground floor level.
- Treated and sealed timber skirting and architraves.
- 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 raised ground floor level.
- It is recommended that the site is registered with the Environment Agency's 'Warnings Direct' flood warning system. The Agency provides this flood warning service in England and Wales and supports the public taking action to prepare and respond when these warnings are issued. The warnings are provided for flooding from rivers and the sea but not for localised flash flooding that cannot be predicted, for example from blocked or overloaded sewers or local groundwater flooding. The Agency issues warnings through media on TV and radio weather bulletins and on its website (www.environment-agency.gov.uk/floodline). In areas of particular risk, the Agency can send a warning message direct to people

at home or at work by telephone, fax or pager using an Automatic Voice Messaging (AVM) system.

7 CONCLUSION

7.1 The following conclusions, in relation to the questions posed at the start of this document, are as follows:

Identify and address flood risk issues associated with the proposed development:

The potential sources of flood risk have been discussed within this report. It has been established that main source of flooding to the site is if a breach were to occur in the west bank of the tidal River Nene. The risk of this happening along this section of bank can be considered to be low

Assess if the project is likely to be affected by flooding from all relevant sources both now and in the future:

The breach hazard maps show that the site is not theoretically at risk of flooding now but is in the future.

Demonstrate the project is safe and where possible reduces flood risk overall and proposes measures to deal with the identified effects and risks:

It is proposed that the ground floor levels of the 1 storey dwellings be set 1m above existing ground with an additional 300mm (minimum) flood resilient construction. Flooding events are generally predicted, with warnings being given on pending events at least two hours in advance. There is a good road network in the town and surrounding area which would allow escape in the event of an unpredicted flooding event. If flooding did occur occupants could also escape to the first floor where they could await rescue if evacuation was not possible. It is considered that the risks to occupants and buildings are low and there is an adequate standard of protection against flooding for the anticipated life of the development.