

FLOOD RISK ASSESSMENT

FREE RANGE EGG PRODUCTION UNIT, BASTON FEN, LINCOLNSHIRE. PE6 9PU

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DOCUMENT HISTORY

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1 INTRODUCTION

- 1.1 This Flood Risk Assessment (FRA) has been prepared to accompany a planning application for a proposed Free Range Egg Production Unit at Baston Fen, Lincolnshire.
- 1.2 The site is located at the boundary of the administrative districts of South Kesteven and South Holland. Although the site is located in South Holland this assessment will include information from the South Kesteven Strategic Flood Risk Assessment (SFRA) which is relevant to the proposed site for development.
- 1.3 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 and 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.
 - Assess whether the project will increase the flood risk elsewhere.
 - 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 application is located approximately 3 miles to the east of the Baston, within the district of South Holland, Lincolnshire (see Figure 1). The grid reference for the site is TF 15109 16875.
- 2.2 The application is approximately 0.5ha in size and is located in the north western portion of an agricultural field which occupies an area of approximately 28 acres. The field appears to be currently used for the farming of arable crops. Two wind turbines, which are within the applicant's land ownership, are located to the west. The north eastern and north western boundaries are formed by open drains. The south eastern and south western boundaries are formed by informal roads providing access to the proposed site and to the two wind turbines. The application site appears to be relatively flat.
- 2.3 The site is located within a mainly agricultural context and is surrounded by agricultural fields. A small collection of agricultural buildings are located approximately 240m to the south of the site and pair of residential cottages are located approximately 300m to the south west of the site. In the wider context the landscape has a mainly agricultural character punctuated with dwellings and agricultural buildings.
- 2.4 The site is accessed via an informal road from Baston Outgang Road which is located 200m to the south.
- 2.5 The site is located within Flood Zone 3 as defined on the gov.uk 'Flood Map for Planning' (see Figure 2).



FIGURE 1: Aerial photographs highlighting location of site.

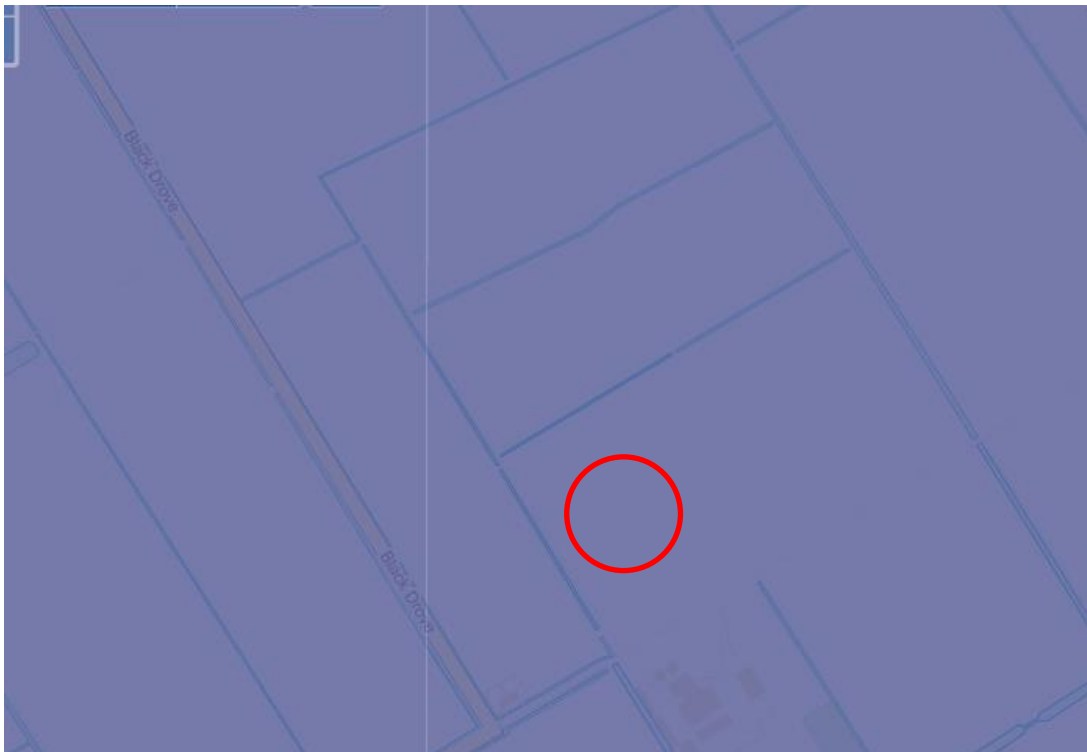


FIGURE 2: Extract from gov.uk Flood Map, proposed site highlighted.

3 PROPOSED SCHEME

- 3.1 The proposed scheme involves the erection of 1no Free Range Egg Production Unit. The building will house up to 32,000 free range laying hens. The building will be 89m in length and 31m in width and will have a ridge height of 7m with an eave height of 2.5m. Areas of concrete hard standing will be created at the end of the building. (see Figure 3).

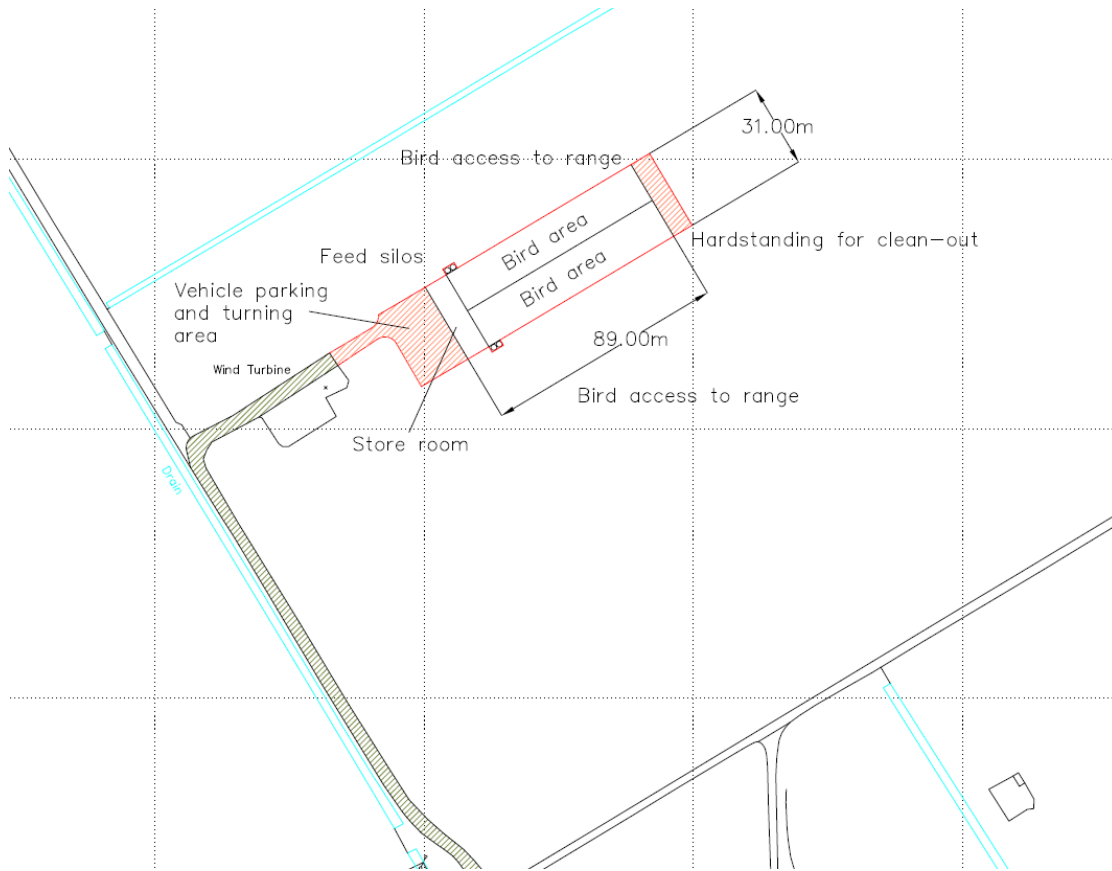


FIGURE 3: Proposed site plan. Red circle shows the proposed unit.

4 HISTORIC FLOODING

- 4.1 The South Kesteven District Council Strategic Flood Risk Assessment (SFRA) doesn't identify the site as being within an area of historical flooding.

5 SEQUENTIAL & EXCEPTIONS TESTS

- 5.1 The Sequential Test ensures that a sequential approach is followed to steer new development to areas with the lowest probability of flooding. The aim is to steer new development to Flood Zone 1 (areas with a low probability of river or sea flooding). Where there are no reasonably available sites in Flood Zone 1. Local planning authorities should take into account the flood risk vulnerability of land uses and consider reasonably available sites in Flood Zone 2 (areas of medium probability of river or sea flooding), applying the Exception Test if required. Only where there are no reasonably available sites in Flood Zones 1 or 2 should the suitability of sites in Flood Zone 3 (areas with a high probability of river or sea flooding) be considered.
- 5.2 In this situation the site and the immediate wider area falls within Flood Zone 3. The site is located in an agricultural setting some distance away from residential dwellings and close to an agricultural unit. Given that the surrounding area is also located within Flood Zone 3 and that the site is an appropriate agricultural setting for the proposed use it is submitted that the site is sequentially acceptable.
- 5.3 The NPPF and NPPG introduce the concept of flood risk vulnerability and flood zone compatibility, providing a mechanism for assessing the appropriateness of proposed uses against various degrees of flood risk (See Table 1,2 & 3 on page 10). Applying the likelihood of flooding identified from the maps to Table 1 the site mainly falls within Flood Zone 3, classified as having a high chance of flooding. Table 2 classifies the proposed agricultural development as being Less Vulnerable. Table 3 compares Table

1 and Table 2; this confirms that the proposed development is appropriate in this location and does not need to undertake the Exceptions Test.

FLOOD ZONES

Table 1

Zone 3a – High Probability

Definition

Land having between a 1 in 100 or greater annual probability of river flooding; or land having a 1 in 200 or greater annual probability of sea flooding

FLOOD RISK VULNERABILITY CLASSIFICATIONS

Table 2

LESS VULNERABLE	• Police, ambulance and fire stations which are not required to be operational during flooding • Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'More Vulnerable' class; and assembly and leisure. • Land and buildings uses for agriculture and forestry. • Waste treatment • Minerals working and processing • Water treatment works which do not need to remain operational during times of flood. • Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.
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FLOOD RISK VULNERABILITY AND FLOOD ZONE 'COMPATIBILITY'

Table 3

Flood Risk Vulnerability classification (Table 2)	Essential Infrastructure	Water compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone 1	✓	✓	✓	✓	✓
Flood Zone 2	✓	✓	Exception Test Required	✓	✓
Flood Zone 3a	Exception Test Required	✓	X	Exception Test Required	✓
Flood Zone 3b 'Functional Floodplain,	Exception Test Required	✓	X	X	X
X = Development should not be permitted ✓ = Development is appropriate					

6 ASSESSMENT OF POTENTIAL SOURCES OF FLOODING AND MITIGATION MEASURES

- 6.0 This section presents an assessment of Flood Risk to the development from
- a) external sources; and
 - b) potential of the proposed development to cause flood risk elsewhere

A) Assessment of Flood Risk to Development from External Sources

6.1 Assessment of Flood Risk from Fluvial/Tidal Sources

- 6.1.1 The Environment Agency Flood Maps show that the site is located within Flood Zone 3 and therefore has a 1 in 100 or greater annual probability of flooding from a river or 1 in 200 or greater annual probability of sea flooding (it should be noted that this ignores the presence of flood defences).
- 6.1.2 The River Glen is located approximately 1 mile to the north of the site. the South Kesteven SFRA describes the River Glen as *'The River Glen - originates to the west of Baston, at the convergence of the West Glen and the East Glen Rivers. The River Glen flows in a north easterly direction, passing through a number of villages and residential areas. The River Glen converges with the River Welland north east of Surfleet Seas End.'* The River Glen is protected by flood defences. A watercourse known as Counter Drain is also located to the north of the site running parallel to the River Glen. In terms of flood risk from fluvial sources in the area of site the South Kesteven SFRA advises that the likelihood of flooding is considered to be low give the presence of pumped IDB systems and flood defences.
- 6.1.3 The Wash is located approximately 22 miles to the east of the site. The South Kesteven SFRA advises the tidal limit of the River Welland and Glen located at Spalding and Surfleet respectively.
- 6.1.4 The South Holland SFRA Residual Flood Hazard Map for the 2115 Scenario (1% Fluvial & 0.5% Tidal probability) identifies the flood risk to the site as being

Danger for Some (0.75 – 1.25). The Residual Peak Depth Map for the Year 2115 scenario (1% Fluvial & 0.5% Tidal probability) identifies the peak depth of 0.5m to 1m.

- 6.1.5 Therefore the site is theoretically at risk from fluvial and tidal flooding but this risk is seen as being low.

6.2 Assessment of Flood Risk from Overland Flow (Pluvial)

- 6.2.1 The Environment Agency Surface Water Flood Map shows that the site is not at risk of surface water flooding.

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 The proposed development involves the erection of 1 no agricultural poultry unit with a roof area of approximately 2759m² and areas of concrete hardstanding of approximately 1000m². Therefore, the proposed development will increase the impermeable area of the site by approximately 3759m². In order to mitigate flood risk posed from the site post development adequate control measures should be considered for the site.

- 6.6 In accordance with recognised guidance there is a hierarchy of surface water from new development should be discharges. The should be as follows;

- Infiltration
- Water course
- Public sewer

6.7 The surface water from the roof and the area of hardstanding will be discharged in a sustainable manner. It is suggested that surface water system utilises a combination of infiltration drainage (subject to percolation tests) and an attenuation system to discharge to a local watercourse at an agreed rate. The details of the proposed surface water system for the new unit should be designed by an appropriately qualified person.

6.8 The 'dirty water' produced when cleaning the poultry unit will be discharged to an underground sealed tank. The poultry unit will be constructed with a 150mm ring beam to prevent the escape of 'dirty water' when the unit is being cleaned.

MITIGATION MEASURES

6.9 The dominant, potential source of flooding have been identified as Fluvial and Tidal. Although the entire development site is stated to be within Flood Zone 3 the likelihood of flooding is considered to be extremely low, but the site is still theoretically at risk of flooding. A precautionary approach should be adopted to ensure that the development is safe and not exposed unnecessarily to flooding. Therefore it recommended that the following mitigation measures are put into place;

- The River Glen water courses are currently protected by raised earth embankments. It is assumed that these defences will be maintained to the current level by the relevant drainage body (IDB or EA)
- In this situation given the Flood Use Classification of the development the raising of the finished floor levels is not required, practical or appropriate.
- It is advised that flood resilient construction methods are used for walls and floors below the flood level
- Locating electrical systems (sockets, cabling) above flood levels

- 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.
- It is also recommended that an emergency plan is put into place for employees and livestock when the Environment Agency have issued a flood warning.
- Sustainable drainage techniques should be used for the discharge of surface water to ensure that flood risk is not increase elsewhere. In this case the surface water from the proposed development will be discharged via infiltration drainage and an attenuation 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 fluvial and tidal flooding is the dominant source of flood risk in the area.

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

Although the entire development site is within Flood Zone 3 the likelihood of flooding is considered to be extremely low, but the site is still theoretically at risk of flooding.

Assess whether the project will increase the flood risk elsewhere:

The proposed development will increase the impermeable (roof) areas for the site. Sustainable drainage techniques will be used for the discharge of surface water to ensure that flood risk is not increase elsewhere. In this case the surface water from the proposed development will be discharge to adjacent water course at an agreed rate.

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 development should incorporate flood resilient construction methods where appropriate. The site should be registered with the Environment Agencies flood warning system and an emergency plan for the site is put into place. The use of sustainable drainage systems will help to reduce flood risk overall.

- 7.2 The site has been identified in an area that is at risk from flooding, however national planning policy emphasises the need for a balanced flexible approach which addresses the risks of flooding whilst recognising the benefits of development. It is considered that the risk of flooding is real but relatively low. Flooding events are generally predicted with a two hour warning being given on pending events.
- 7.3 This report demonstrates the proposed development is compliant with the sequential and exception tests set out in the NPPF and therefore, it is considered, planning permission should not be refused on flood risk grounds.