

**FLOOD RISK ASSESSMENT  
FOR RESIDENTIAL AND AGRICULTURAL DEVELOPMENT  
AT KEEPERS COTTAGE, DECOY ROAD, SOUTHERY**

**FINAL REPORT**

**ECL1097/IAN H BIX ASSOCIATES LTD**

**DATE AUGUST 2023**

**ELLINGHAM CONSULTING LTD**

Email: [tim@ellinghamconsulting.co.uk](mailto:tim@ellinghamconsulting.co.uk)

## CONTENTS

- 1.0 INTRODUCTION
  
- 2.0 SITE LOCATION AND DESCRIPTION
  - 2.1 Site Location
  - 2.2 Existing Site
  - 2.3 Proposed Development
  - 2.4 Local Development Documents
  - 2.5 Available Flood Risk Information
  
- 3.0 FLOOD RISK VULNERABILITY
  - 3.1 The Sequential and Exception Test
  - 3.2 Vulnerability Classification
  - 3.3 Application of the Sequential Test
  
- 4.0 SITE SPECIFIC FLOOD RISK
  - 4.1 Local Flood Assets
  - 4.2 Sources of Flooding
  - 4.3 Probability of Flooding
  - 4.4 Historic Flooding
  - 4.5 Climate Change and Residual Risk
  
- 5.0 FLOOD RISK MITIGATION
  - 5.1 Summary of Risks
  - 5.2 Mitigation Measures
  
- 6.0 CONCLUSIONS

### ATTACHMENT 1 – Proposed Site Plan (Dwg 2560-04)

#### DISCLAIMER

*This document has been prepared solely as a Flood Risk Assessment in support of a planning application for a residential and agricultural development at Keepers Cottage, Decoy Road, Southery, Norfolk. "Ellingham Consulting Ltd" accepts no responsibility or liability whatsoever for any use made of this document other than by the client "Mr I Osler" for the purposes it was originally commissioned and prepared. All comments and opinions made are based upon information available to "Ellingham Consulting Ltd" during the necessary investigative process, and the conclusions and recommendations could, therefore, differ in the event of material subsequently being found erroneous, incomplete, or misleading. "Ellingham Consulting Ltd" therefore, accepts no liability should this prove to be the case.*

## **1.0 INTRODUCTION**

This Flood Risk Assessment has been prepared in accordance with National Planning Policy Framework (NPPF) and supporting planning practice guidance (PPG) on Flood Risk and Coastal Change.

In areas at risk of flooding or for sites of 1 hectare or more, developers are required to undertake a site-specific Flood Risk Assessment to accompany an application for planning permission. This Flood Risk Assessment has been produced on behalf of Mr I Osler in respect of a development that consists of a replacement dwelling and agricultural building at Keepers Cottage, Decoy Road, Southery.

A planning application for the proposed development is to be submitted by Ian H Bix Associates Ltd.

## 2.0 SITE LOCATION AND DESCRIPTION

### 2.1 Site Location

The site is situated at Keepers Cottage, Decoy Road, Southery, Downham Market, PE38 0PH. The National Grid Reference of the site is 56111/29564.

The location of the site is shown on Figure 1.



Figure 1 – Location Plan (© OpenStreetMap contributors)

### 2.2 Existing Site

The site is on the eastern side of Decoy Road. The site comprises a residential dwelling and surrounding garden, three agricultural buildings, and the site access. The site is surrounded by agricultural land. The area of development is approximately 0.35 hectares.

A topographic survey has been undertaken and spot levels are shown in Attachment 1. Ground levels within the site are typically between +0.8m OD and +1.3m OD. In the area where the replacement dwelling will be located ground levels are typically +0.9m OD.

The site is in the Southery & District Internal Drainage Board's (IDB) area. Surface water at the site would naturally drain through soakaway and hence to the IDB drain system. There is a riparian drain on the eastern side of Decoy Road to the north of the site which discharges to an IDB Board Drain 250m north of the site.

The online British Geological Survey maps indicate that the site is likely to be underlain by Carstone Formation - Sandstone. The bedrock is shown to be overlain with superficial deposits of Peat.

## 2.3 Proposed Development

The proposed development consists of a replacement dwelling and agricultural building. The dwelling will have two storeys. The existing dwelling and buildings will be demolished. The development will use the existing access to the site. A Site Plan is provided in Attachment 1.

## 2.4 Local Development Documents

The King's Lynn and West Norfolk Borough Council Local Development Framework - Core Strategy is the adopted Local Plan for the district. Policy CS08 for Sustainable Development states the requirements for flood risk reduction.

The King's Lynn and West Norfolk Borough Council Level 1 Strategic Flood Risk Assessment (SFRA) was prepared in November 2018. The Level 2 SFRA was prepared in March 2019.

The Norfolk Lead Local Flood Authority (LLFA) Statutory Consultee Guidance Document has been drafted to support the development of Norfolk County Council's LLFA role as a statutory consultee to planning and to inform stakeholders in this process such as Local Planning Authorities (LPA's) and developers.

## 2.5 Available Flood Risk Information

An extract from the Environment Agency Flood Map for Planning is shown in Figure 2. The site is located within Flood Zone 3, an area with a high probability of flooding.

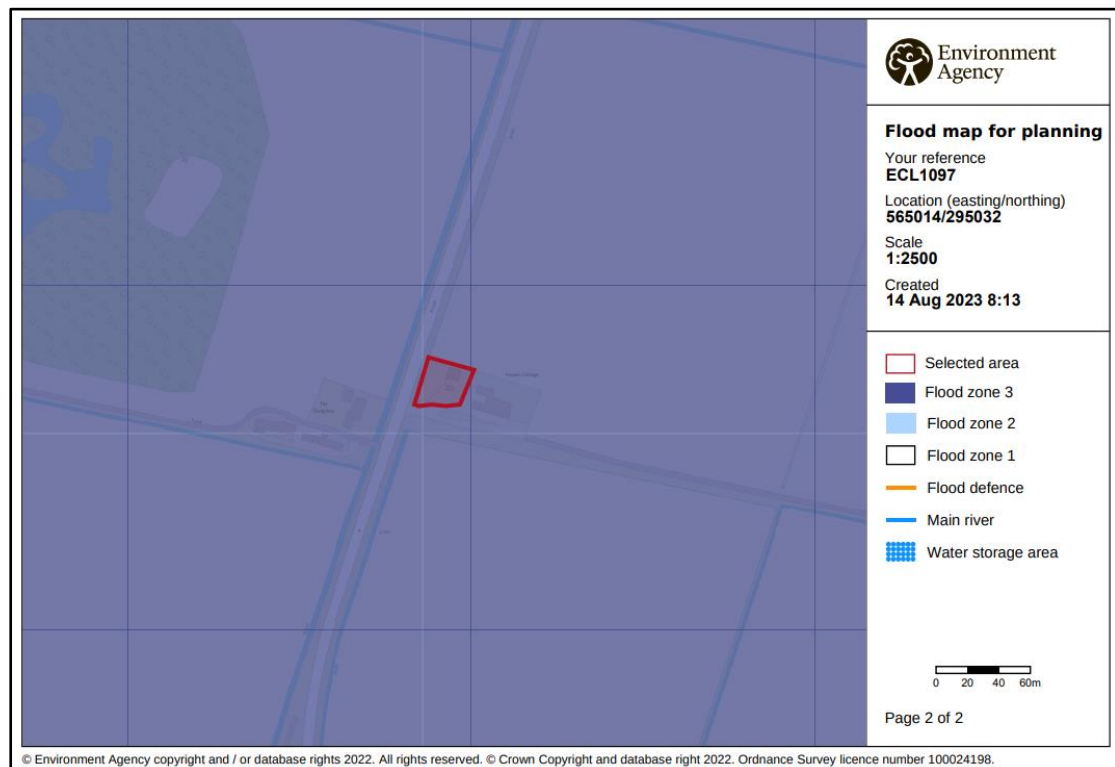


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

- the site has a low risk of flooding from rivers or the sea (annual probability between 0.1% and 1%);
- the site has a very low risk (annual probability less than 0.1%) of surface water flooding; and
- the site is within an area at risk of reservoir flooding when there is also flooding from rivers.

Southery is one of the settlements considered within the King's Lynn and West Norfolk Borough Council Level 2 SFRA however the site is outside of the boundary of the map. The SFRA Level 1 map shows:

- the site is within flood zone 3;
- the site is not at risk during a 1% annual probability (1 in 100 chance each year) fluvial event including allowance for climate change;
- the site is not at risk during a 0.5% annual probability (1 in 200 chance each year) tidal event including allowance for climate change;
- the site is not at risk of surface water flooding during the 1% annual probability (1 in 100 chance each year) event including climate change;
- the site has a susceptibility to groundwater flooding of less than 25%;
- the site is not at risk of reservoir flooding; and
- the site is outside the area at risk during a fluvial breach.

### **3.0 FLOOD RISK VULNERABILITY**

#### **3.1 The Sequential and Exception Test**

The NPPF requires the application of a Sequential Test to ensure that new development is in areas with the lowest probability of flooding.

The Exception Test is a method to demonstrate and help ensure that flood risk to people and property will be managed, while allowing necessary development to go ahead in situations where suitable sites at lower risk of flooding are not available.

#### **3.2 Vulnerability Classification**

Table 2 of the PPG Flood Risk and Coastal Change categorises different types of uses and development according to their vulnerability to flood risk. The proposed development includes an element that is covered by the description of buildings used for dwellings and is classified as 'More Vulnerable'.

Table 3 of the PPG Flood Risk and Coastal Change sets out Flood Risk Vulnerability and flood zone 'compatibility'. The site is in Flood Zone 3 and the development is 'More Vulnerable' therefore it is necessary to complete the Exception Test.

PPG Flood Risk and Coastal Change defines that the lifetime of the development in terms of flood risk and coastal change is 100 years.

#### **3.3 Application of the Sequential Test and Exception Test**

It is for the Local Planning Authority, using the evidence provided and taking advice from the Environment Agency as appropriate, to consider whether an application passes the Sequential Test.

The proposed development is a replacement dwelling and building and therefore it is not necessary to apply the Sequential Test to the development.

The Exception Test requires consideration of the wider sustainability benefits of a development and that the development would be safe and residual risks managed.

Section 5 of this Flood Risk Assessment describes the flood mitigation measures and the management of the residual risks, demonstrating that this development will be safe and not increase flood risk elsewhere. The development is considered to pass the Exception Test.

## 4.0 SITE SPECIFIC FLOOD RISK

### 4.1 Local Flood Assets

The site is 4.1km east of the River Ely Ouse and 2.5km south of the River Wissey. Both watercourses are embanked main rivers.

The River Wissey has its confluence with the River Ely Ouse 7.4km north west of the site. Water levels in the River Ely Ouse and River Wissey are controlled by the sluices and weirs of the Denver Complex.

The River Ely Ouse and River Wissey are the responsibility of the Environment Agency. There is a long-term strategy for the maintenance of the Environment Agency defences which is reviewed and updated periodically.

There is an extensive local drainage network managed by the Southery & District Internal Drainage Board. There is an IDB Board Drain 250m north of the site. The site, and surrounding land, drains by gravity to discharge into the River Wissey.

During the operation and maintenance of its pumping stations, associated structures, and channel systems, the IDB seeks to maintain a general standard capable of providing flood protection to its district. A routine maintenance programme is in place to ensure that the Board's assets are commensurate with the standard of protection that is sought.

Current maintenance standards of the Southery & District IDB and the Environment Agency's defences are generally good.

### 4.2 Sources of Flooding

A summary of the sources of flooding is provided in Table 1.

| Source of Flooding        | Level of Risk  |
|---------------------------|--|
| Drainage Network Flooding | This risk is assessed in Section 4.3.  |
| Surface Water Flooding    | Based upon the EA maps the risk of surface water flooding is very low.       |
| Fluvial Flooding          | This risk is assessed in Section 4.3 & 4.5.                                  |
| Tidal Flooding            | The site is not at risk of tidal flooding.                                   |
| Reservoir Flooding        | Based upon the SFR maps the site is not at risk of flooding from reservoirs. |
| Groundwater Flooding      | There is no evidence to suggest the site is at risk of groundwater flooding. |

Table 1 – Sources of Flooding



### 4.3 Probability of Flooding

The probability of flooding associated with blockages in the Southery & District IDB drainage system is low due to the maintenance standards already achieved and managed by the IDB.

Through the operation and maintenance of the pumping stations and the channel system the Board seek to maintain a general standard capable to providing flood protection to agricultural land and developed areas of 1 in 20 years and 1 in 100 years, respectively. The risk associated with flood events that exceed the standard of protection provided is lowered due to the Southery & District IDB main drains incorporating freeboard. This freeboard provides storage during the exceedance events.

The site benefits from defences on the River Ely Ouse and River Wissey. The site is not at risk during the 1% annual probability (1 in 100 chance each year) fluvial event.

### 4.4 Historic Flooding

During the preparation of this assessment, no evidence was discovered of the site being flooded.

### 4.5 Climate Change and Residual Risk

Climate change is likely to impact the site through increased rainfall intensity and duration affecting the local drainage network and flood levels in the River Ely Ouse and River Wissey.

The SFRA maps show that the site is not at risk during the 1% annual probability (1 in 100 chance each year) fluvial event with an allowance for climate change.

There is a residual risk to the area alongside of the River Ely Ouse and River Wissey if there was a breach in the defences. Based upon the SFRA maps the site is not at risk during a beach.

## 5.0 FLOOD RISK MITIGATION

### 5.1 Summary of Risks

The probability of this development flooding from localised drainage systems is low. Failure of the outfall to the River Wissey could increase the level of risk at the site.

The probability of the site flooding from any Environment Agency system is less than 1% annual probability (1 in 100 chance each year) because of the standards of the existing flood defence systems. Over time there will be a gradual increase in risk to the site due to climate change. During the design life of the development the site is not at risk during the 1% annual probability (1 in 100 chance each year) event.

The site is not at risk during a breach of the fluvial defences.

The proposed arrangement increases the impermeable area and therefore there is an increased volume of surface water that has the potential to increase flood risk.

### 5.2 Mitigation Measures

Based upon the information available during the preparation of this flood risk assessment, it is recommended that:

- the floor level of the dwelling is 0.3m above surrounding ground level;
- there is 0.3m of flood resilient construction above finished floor level; and
- floodwaters can enter the agricultural building and can drain freely from it so that any depth differential is reduced.

The developer should ensure that the occupier of the dwelling is sufficiently aware of the risk of flooding, and the standard of the existing defences. The Environment Agency operates a flood warning system for properties at risk of flooding to enable householders to protect life or take actions to manage the effect of flooding on property. Floodline Warnings Service is a national system run by the Environment Agency for broadcasting flooding warnings. The occupier of the dwelling should register to receive flood warnings.

It is recommended that surface water runoff is managed so that stormwater will not affect the adjoining land or increase the flood risk elsewhere.

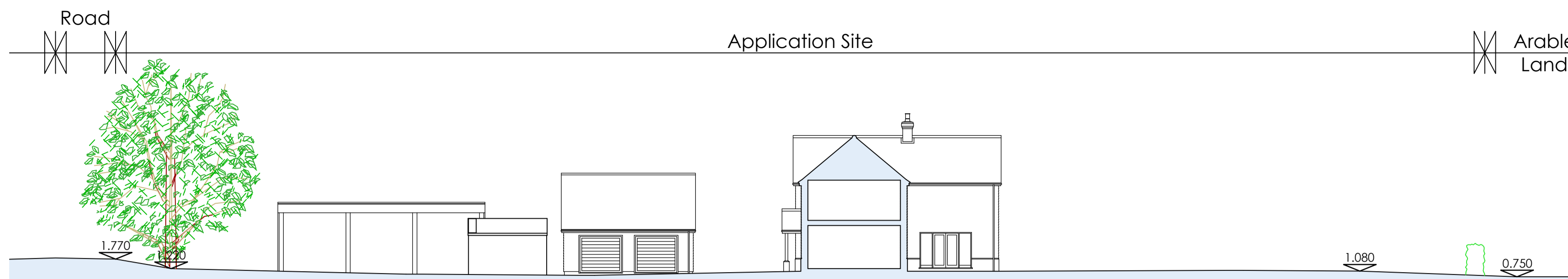
## 6.0 CONCLUSIONS

As a result of the assessment, the following conclusions have been reached.

- The proposed development consists of a two-storey replacement dwelling and a replacement agricultural building at Keepers Cottage, Decoy Road, Southery.
- The site is located within an Internal Drainage Board catchment and through the operation and maintenance of the pumping stations and the channel system the Board seek to maintain a general standard capable to providing flood protection to agricultural land and developed areas of 1 in 20 and 1 in 100 years, respectively.
- The proposed development is in Flood Zone 3. The site benefits from defences that provide protection during the 1% annual probability (1 in 100 chance each year) fluvial event including climate change.
- It is proposed that the finished floor level of the dwelling is 0.3m above existing ground level and there is 0.3m of flood resilient construction above finished floor level and the agricultural building has a water entry and exit strategy.
- The development passes the Sequential Test and Exception Test and is therefore suitable for the proposed location.

**ATTACHMENT 1**

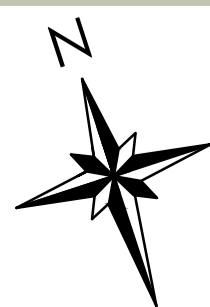
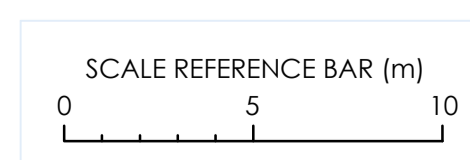
**PROPOSED SITE PLAN  
(Dwg 2560-04)**



Proposed Site Section A-A 1:200



Proposed Site Plan 1:200



**Notes**

- The copyright of this drawing is the property of IAN H. BIX, M.C.I.A.T., and must not be copied without his consent.
- Measurements to be checked on site by the Contractors prior to commencement of works, and any discrepancies brought to the attention of the Designer.

| Revisions |            |   |
|-----------|------------|---|
| A         | 14.09.2023 | Additional information added to plan and proposed pole barn repositioned. |

**IAN · H · BIX**  
**Associates Ltd**  
 M · C · I · A · T  
 ARCHITECTURAL AND  
 BUILDING CONSULTANTS  
 SANDPIPER HOUSE, LEETE WAY, WEST WINCH  
 KING'S LYNN, NORFOLK PE33 0ST  
 TEL: 01553 844077 FAX: 01553 844078

Project  
 Replacement Dwelling  
 Keepers Cottage  
 Decoy Road  
 Southery

Drawing Title  
 Proposed Site Plan  
 and Site Section

Scale 1:200  
 Date August 2023  
 Drawn MC

Drawing No.  
**2560-04A**