

**FLOOD RISK ASSESSMENT  
FOR COMMERCIAL DEVELOPMENT AT  
BRIDGE ROAD, LONG SUTTON**

**FINAL REPORT**

**ECL0788/3D PLANNING LTD**

**DATE FEBRUARY 2023**

**ELLINGHAM CONSULTING LTD**

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## **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 Tears Recovery in respect of the relocation of the Tears Recovery Yard at Sutton Bridge to land to the rear of 45-47 Bridge Road, Long Sutton.

A planning application for the proposed development is to be submitted by 3D Planning Ltd.

## 2.0 SITE LOCATION AND DESCRIPTION

### 2.1 Site Location

The site is located on land to the rear of 45-47 Bridge Road, Long Sutton, Spalding, PE12 9EF. The National Grid Reference of the site is 54422/32249.

The location of the site is shown in Figure 1.



Figure 1 – Location Plan (© OpenStreetMap contributors)

### 2.2 Existing Site

The site is on the north side of Bridge Road to the rear of 45-47 Bridge Road. The site is vacant with several dilapidated buildings. The site has an access on its eastern boundary. The area of development is approximately 1.1 hectares.

A topographic survey is provided in Attachment 1. The site is flat with ground levels between +3.6m OD and +4.0m OD. The carriageway level of Bridge Road alongside the development is +4.4m OD.

The site is in the South Holland Internal Drainage Board (IDB) District. Surface water at the site would naturally drain through soakaway to the IDB network. There is a riparian drain on the field boundary to the north east of the site and an IDB High Priority Watercourse on the southern boundary of the site alongside Bridge Road.

The online British Geological Survey maps indicate that the site is likely to be underlain by Amptill Clay Formation mudstone. The bedrock is shown to be overlain with superficial deposits of clay and silt.

## 2.3 Proposed Development

The proposed development is the relocation of a car repair and recovery business to the site. Details of the proposed development are provided in Attachment 2.

## 2.4 Local Development Documents

The South East Lincolnshire Local Plan 2011 – 2036, adopted in March 2019, is the Local Plan for the district. Policy 4: Approach to Flood Risk states the requirements for flood risk reduction.

The South East Lincolnshire Level 1 and Level 2 Strategic Flood Risk Assessment (SFRA) was prepared in June 2017.

The Joint Lincolnshire Flood Risk and Drainage Management Strategy has been prepared by Lincolnshire County Council as the Lead Local Flood Authority. The purpose of the Strategy is to increase the safety of people across Lincolnshire by reducing the number of people at risk of flooding, increasing the resilience of local communities, and reducing the impact of flooding.

## 2.5 Flood Zones

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.

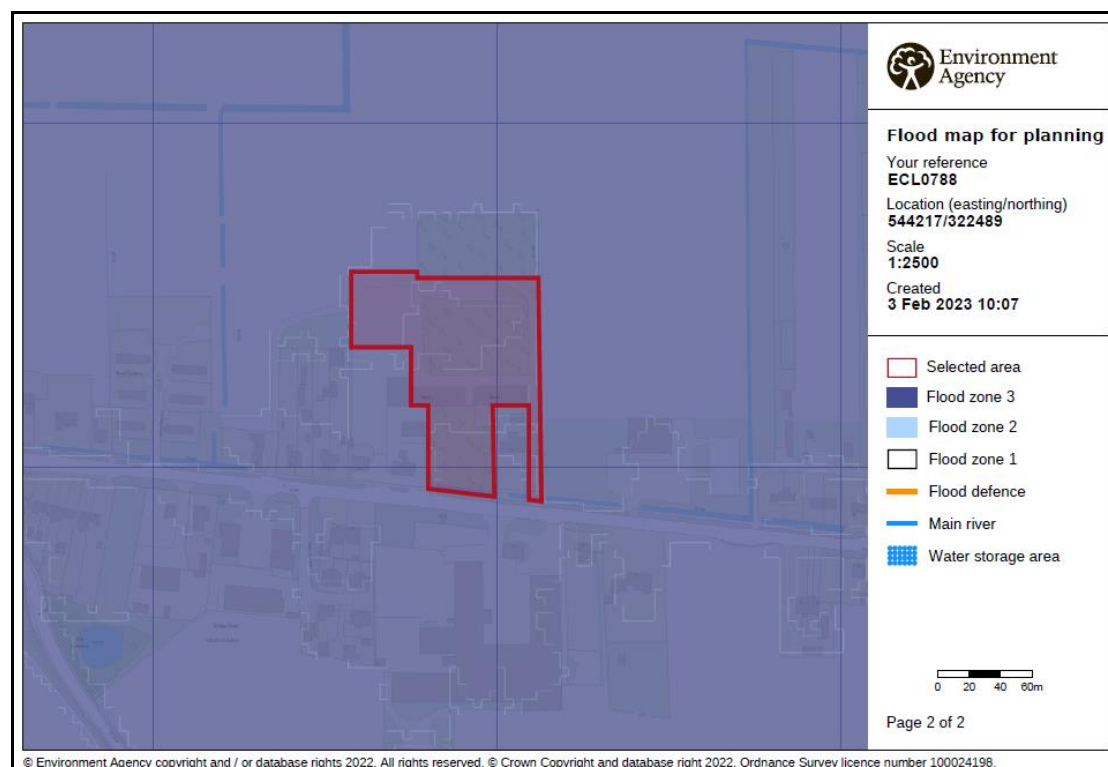


Figure 2 – Environment Agency Flood Map for Planning

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%);
- in general, the site has a very low risk of surface water flooding (annual probability less than 0.1%); and
- the site is not within an area at risk of reservoir flooding.

Table 1 shows the level of risk at the site within the South East Lincolnshire SFRA.

| <b>SFRA Map</b>                                                   | <b>Present Day</b>                        | <b>Year 2116</b>                               |
|-------------------------------------------------------------------|-------------------------------------------|------------------------------------------------|
| Residual Flood Hazard Map for the 1% fluvial and 0.5% tidal event | The site is outside the 'Low Hazard' area | The site is in the 'Danger to Most' area       |
| Residual Peak Depth Map for the 1% fluvial and 0.5% tidal         | The site is outside the area at risk      | The peak flood depth is between 0.5m and 1.0m. |

Table 1 – Flood Risk within SFRA Maps

### **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 is covered by the description of general industry and is classified as 'Less 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 'Less Vulnerable' therefore it is not 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**

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.

Large parts of the South Holland district between the River Welland and River Nene lie within Flood Zone 3. As such, opportunities to undertake the development at an alternative site with a lower flood risk are limited.

The SFRA states that as it is necessary to use the refined flood risk information (hazard and depth maps) to assist with the application of the sequential test. The refined flood risk information contained within the SFRA demonstrates the site is not at risk during the present day 1% fluvial and 0.5% tidal event. The site therefore has a low probability of flooding and is considered to pass the Sequential Test.

## **4.0 SITE SPECIFIC FLOOD RISK**

### **4.1 Local Flood Assets**

The site is 4.2km west of the tidal River Nene. The site is protected by the River Nene tidal defences. The River Nene is 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 South Holland IDB. There is high priority watercourse on the southern boundary of the site. The site and the surrounding land are within the Luton Leam catchment and which discharges to the tidal River Nene at Luton Leam Tidal Sluice.

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 Boards assets are commensurate with the standard of protection that is sought.

Current maintenance standards of the South Holland Internal Drainage Board and the Environment Agency are generally good.

### **4.2 Sources of Flooding**

The potential sources of flooding that have been identified during this assessment are:

- local blockages to the South Holland IDB drainage system;
- an event in the local drainage network greater that exceeds the standard of protection;
- failure of Luton Leam Tidal Sluice; and
- overtopping and/or breaching of the tidal River Nene.

### **4.3 Probability of Flooding**

The probability of flooding associated with blockages in the South Holland IDB drainage system is low due to the maintenance standards 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 South Holland IDB main drains incorporating freeboard. This freeboard provides storage during the exceedance events.

The site benefits from defences on the River Nene that provide protection during a 0.5% annual probability (1 in 200 chance each year) tidal event and a 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

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

The River Nene tidal defences have been designed to include an allowance for climate change.

In summary the existing systems and defences are appropriate for the design life of the development (i.e., 100 years).

#### 4.6 Residual Risk

There is a residual risk of flooding at the site should a breach occur. The South East Lincolnshire SFRA includes maps demonstrating the residual peak depth in 2116. When climate change allowances are applied to the 1% annual probability (1 in 100 chance each year) fluvial event and 0.5% annual probability (1 in 200 chance each year) tidal event the peak depth at the site from direct overtopping together with breach failure is up to 1.0m. An extract from this map is shown in Figure 3 below.

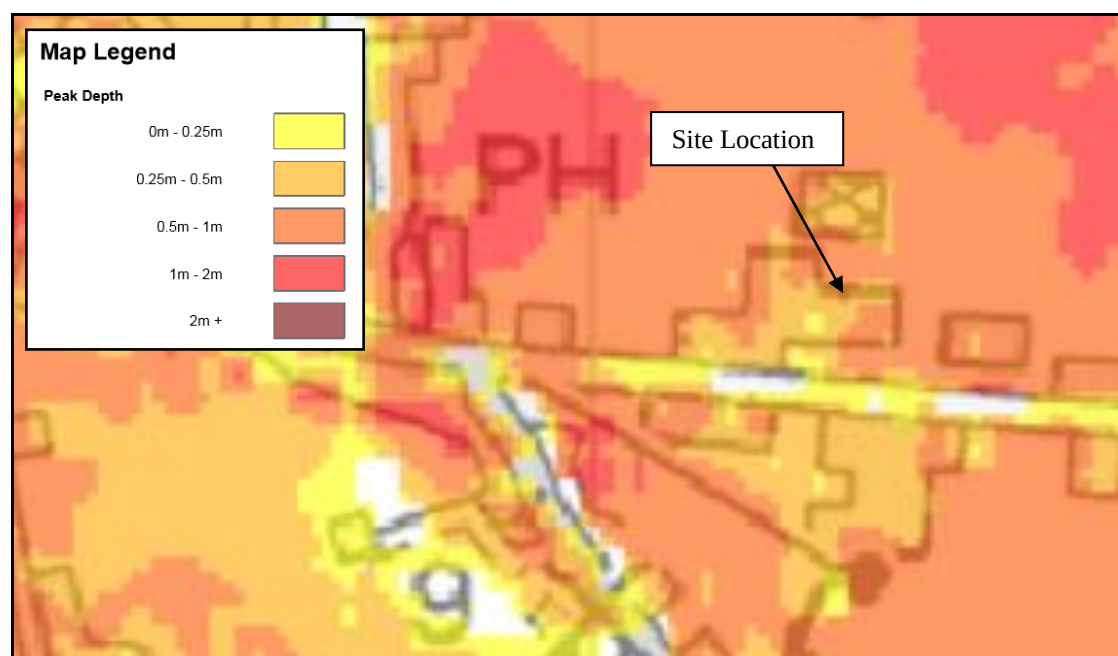


Figure 3 – SFRA 2116 Residual Peak Depth Map

## 5.0 FLOOD RISK MITIGATION

### 5.1 Summary of Risks

The probability of this development flooding from localised drainage systems is low. Failure of Lutton Leam Tidal Sluice could lead to an increased 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 defences. Over time there will be a gradual increase in risk to the site due to climate change. During the design life of the development it is not anticipated that the site would flood.

The SFRA considers the residual risk associated with overtopping and a breach in the defences in 2116. The breach depth during the 0.5% annual probability (1 in 200 chance each year) tidal event is between 0.5m and 1.0m.

The development increases the impermeable area and therefore there will be an increased volume of surface water that has the potential to increase flood risk.

### 5.2 Mitigation Measures

The site has a low 'actual risk' of flooding. Based upon the information available during the preparation of this flood risk assessment it is recommended that the finished floor level of buildings is a minimum of 0.15m above surrounding ground levels and the following resilience measures are considered:

- there is a water entry strategy allowing flood water to enter buildings and drain freely from it;
- the main electrical supply and switchboard are elevated above the flood level;
- the user of the site should register to receive flood warnings from the Environment Agency to reduce the vulnerability of people at the site; and
- the user of the site should identify the actions to be undertaken in the event of receiving a flood warning.

During an exceedance event it is anticipated that sufficient time would be available to take precautionary actions to limit the potential impact of flooding.

Should there be a failure Lutton Leam Outfall Sluice and conditions were such to put properties and land at risk of flooding, the Internal Drainage Board would take emergency action to maintain the drainage level of service by utilising temporary pumping equipment.

A surface water drainage strategy has been prepared to mitigate the risk of surface water runoff from the site.

## 6.0 CONCLUSIONS

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

- The proposed development is the relocation of a car repair and recovery business to land to the rear of 45-47 Bridge Road, Long Sutton, The Ship, London Road, Long Sutton.
- 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 tidal defences on the River Nene that provide protection during the 1% annual probability (1 in 100 chance each year) fluvial event and 0.5% annual probability (1 in 200) tidal event including climate change.
- During the 0.5% annual probability (1 in 200 chance each year) event in 2115 the site is at risk during a breach with flood depths of 0.5m and 1.0m.
- It is recommended that the finished floor level of buildings are a minimum of 0.15m above surrounding ground levels and flood resilience measures are adopted to manage the risk of a breach. These include a water entry strategy, reducing the vulnerability of people and safe access and egress.
- The development passes the Sequential Test and is therefore suitable for the proposed location.

## **ATTACHMENT 1**

**TOPOGRAPHIC SURVEY  
(Dwg TRL/17-06-2022/01)**



Notes / Legend:

The depiction of walls, fences or hedges does not necessarily represent a legal boundary. It is the clients responsibility to confirm legal boundaries.  
All trees measured on site have an approximate spread and height ( species should be confirmed by an arboriculturist ).

Unless previously agreed all visible existing services on site have been surveyed unless access is restricted by vehicles or other significant obstructions.  
Manhole covers will not be lifted ( unless the client has arranged for assistance to be available and accepts all liability ) due to the possible health and safety risk to staff or public and the possibility of causing damage to the cover.  
If covers are lifted as above any pipe directions are indicative only and pipes sizes have been estimated from above ground and therefore are approximate. Invert levels are measured by tape from ground level and calculated from the cover level.

Plotting on paper may lead to a variety of scaling risks/errors due to paper stretching or inaccurate plotter settings.  
Therefore any dimensions scaled from a paper copy of this survey should be treated with caution.  
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing and must be used in conjunction with all other relevant documentation.

Although all due care and attention has been maintained throughout the survey, any critical dimensions relating to future projects should be checked on site prior to any work being undertaken.

The data used for the computation of horizontal and vertical control for this survey was recorded using survey grade GNSS receivers. This data was provided by Leica Geosystems Smartnet RTK correction service and therefore the primary control is based upon OSGB36(15) as detailed below.

A scale factor of 1 has been applied to this survey based around station 1 and referenced to station 2.

All drawing units, dimensions and levels are in meters and relate to O.S. grid and datum unless otherwise stated.

| Reference Grid:                                                             | Reference Datum:                                                             |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Ordnance Survey National Grid OSGB36(15) OSGM15 via the Active GNSS Network | Ordnance Survey National Datum OSGB36(15) OSTN15 via the Active GNSS Network |

| Revision | Details | Date |
|----------|---------|------|
|----------|---------|------|

Comments:



252 Broadway, Yaxley, Peterborough PE7 3NR  
Tel:01733 243174, info@prismsurveys.co.uk

Client:

Tears of Sutton Bridge Ltd

Project Title:

Survey of Land off Bridge Road Long Sutton

Drawing Title:

Topographical Survey

| Scale: | Sheet Size: | Drawn: | Date: |
|--------|-------------|--------|-------|
|--------|-------------|--------|-------|

|       |    |        |            |
|-------|----|--------|------------|
| 1:500 | A1 | P.A.B. | 17.06.2022 |
|-------|----|--------|------------|

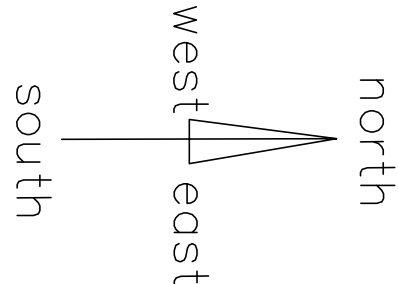
| Drawing Number: | Revision: |
|-----------------|-----------|
|-----------------|-----------|

|                   |  |
|-------------------|--|
| TRL/17-06-2022/01 |  |
|-------------------|--|

## **ATTACHMENT 2**

### **PROPOSED BLOCK PLAN (Dwg 448SK02 D)**

south



Unable to Survey area  
due to being Overgrown  
G2 - C1  
Mixed species

EXISTING HARDSTANDING TO  
BE CLEARED AND RETAINED

HARDSTANDING

T0707 - C1

NEW ACCESS ROAD

Mixed Species Group

G1 - C1

NEW ACCESS ROAD

COMMERCIAL  
VEHICLE  
REPAIR

LIGHT  
VEHICLE  
REPAIR

RECEPTION  
/OFFICES

DIS  
PLANTING

AREA TO BE GRASSED

NEW HIGHWAY ACCESS

2.4M X 120M VEHICULAR VISIBILITY SPLAY

PLANTING

NEW HIGHWAY ACCESS

Assumed Boundary line

Assumed building line

Assumed building line

Assumed building line

H2 - C1  
Cypress

H1 - B1  
Privet

Metres

TREES REMOVED TO FRONTAGE

T0708 - B1,3 ASH

T0709 - B1,2 BIRCH

G4 - C1,2 CYPRESS

G6 - B1,2 MIXED SPECIES

G3 - C1 MIXED SPECIES

TREES RETAINED TO FRONTAGE

T0710 - B1,2 OAK

T0711 - B1,2 NORWAY MAPLE

T0712 - B1,2 HORSE CHESTNUT

T0713 - B1,2 HORSE CHESTNUT

G5 - C1,2  
Mixed species



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www.hid.co.uk

Client: TEARS RECOVERY

Job Title:

PROPOSED TEARS RECOVERY SITE  
BRIDGE ROAD  
LONG SUTTON  
Lincs

Scale: 1:500 @ A2 Date: 10/12/21

Drawing Title: PROPOSED SITE PLAN

Drawing No: 448S002 Revision: D

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