

FLOOD RISK ASSESSMENT

FOR

**PROPOSED BARN CONVERSION TO RESIDENTIAL
DWELLING**

AT

**MILL FARM, SKERNE ROAD, WANSFORD, DRIFFIELD,
YO25 8NQ**

ON BEHALF OF

EDWARDSON

ASSOCIATES

Project ref: 299943/FRA/JHC
Date First Issued: 10th October 2023
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Document Revision Box			
Revision	Date	Description	Author
01	10 th Oct 2023	Planning Issue	JHC
02	11 th Oct 2023	Planning Issue – Client Comments	JHC

1.0 Introduction

GGP Consult has been commissioned by Edwardson Associates to prepare a flood risk assessment for the proposed conversion of redundant outbuilding to one residential property at Mill Farm, Skerne Road, Wansford, Driffeld, YO25 8NQ.

The purpose of this assessment is to demonstrate compliance with local planning policy as outlined within the East Riding of Yorkshire Council Strategic Flood Risk Assessment (SFRA) and the National Planning Policy Framework (NPPF).

This assessment will highlight flood risk to the site and detail appropriate measures to mitigate the risk.

2.0 Description of Existing Site

The proposed site is located off Skerne Road Wansford.

As existing the site contains Mill Farmhouse and 5No external barns.

The OS National grid reference of the centre of the site is approximately TA 06354 56116.

The existing finish floor levels are as followings,

- Barn 1 = 6.620m AOD
- Barn 2 = 6.618 – 6.610m AOD
- Barn 3 = 6.680m AOD
- Barn 4 = 6.450 – 6.460m AOD
- Barn 5 = 6.500 – 6.720m AOD

The average site level around the barns equates to 6.453m AOD.

The existing site access road has an average level along its length of 6.700m AOD with the average level on Skerne Road equating to 6.730m AOD.



Extract from Architects Plans – Showing Existing Layout

3.0 Description of Proposed Development

It is proposed to convert the existing barns into a single four bed dwelling.

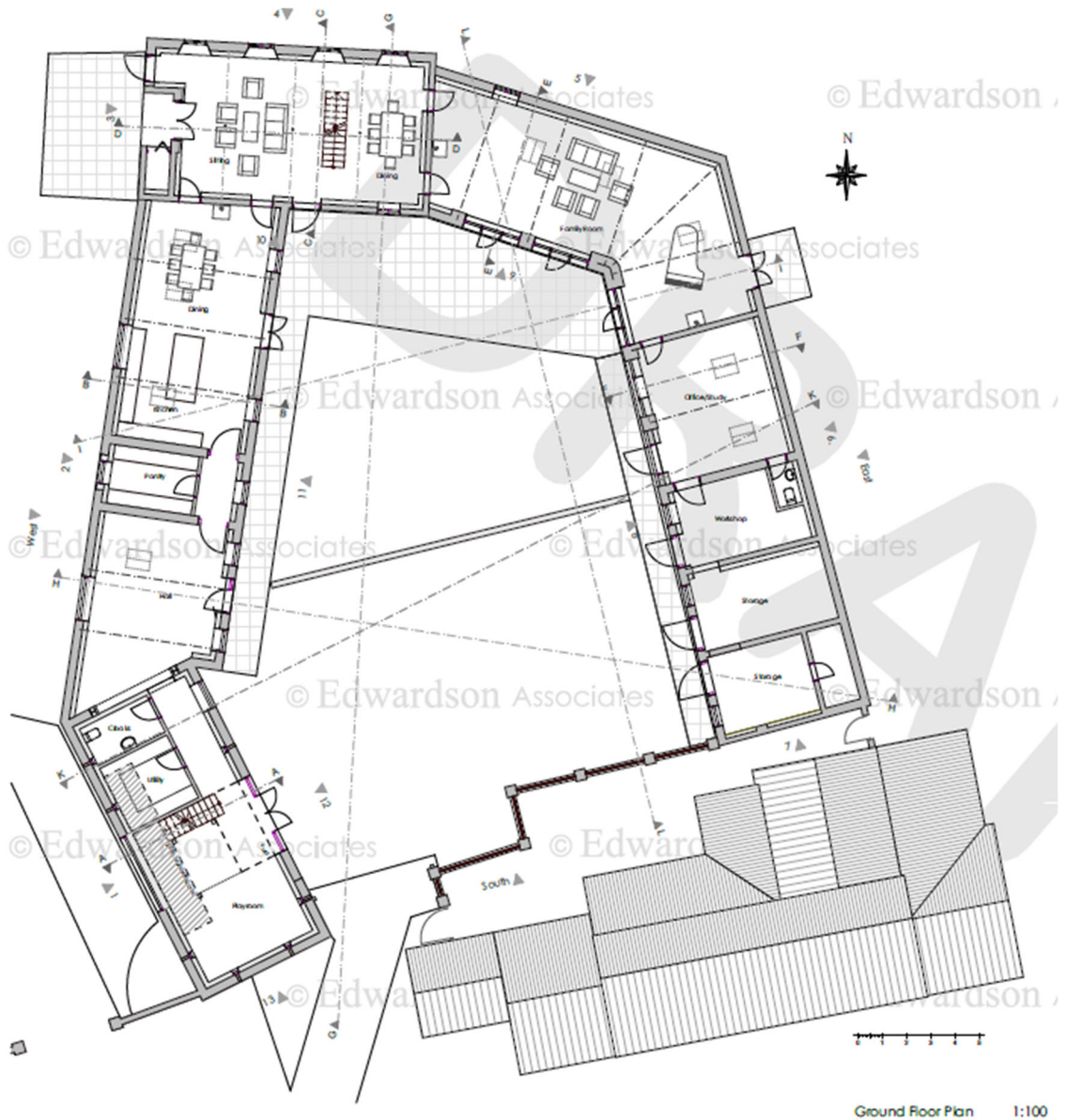
The proposed development is in a known area of flood risk as outlined by the Environment Agency's flood risk map.

A level 1 and 2 Strategic Flood Risk Assessment (SFRA) has been prepared for the East riding of Yorkshire Council by CAPITA¹.

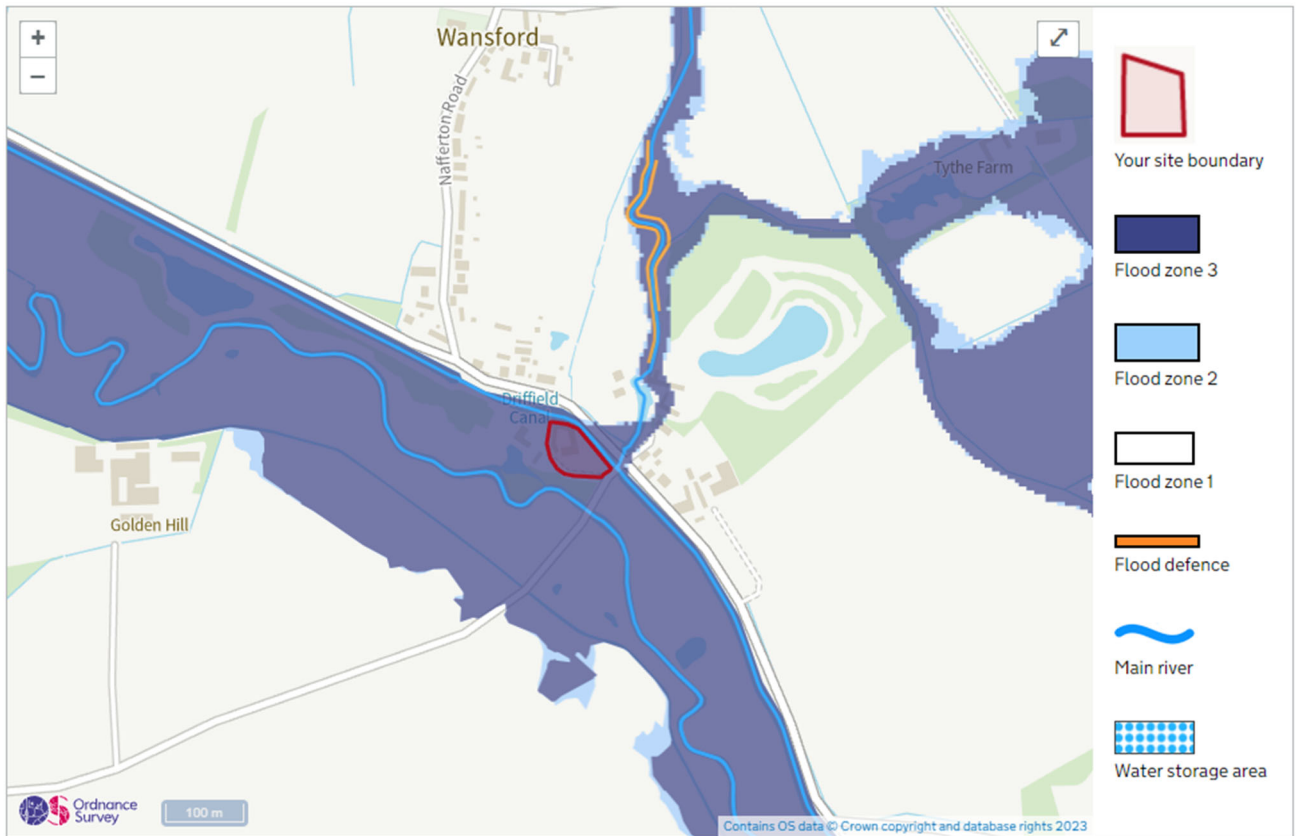
A key element of the SFRA is that it has collated all known sources of flooding, including tidal, river, surface water (local drainage), sewers and groundwater.

With reference to the latest SFRA¹ indicative Flood Risk map, the proposed development site lies entirely within **Flood Zone 3**.

Table 1 of the NPPF technical guide³ states all development proposals in this zone should be accompanied by a detailed flood risk assessment.



Extract from Architects Plans – Showing Proposed Ground Floor Layout

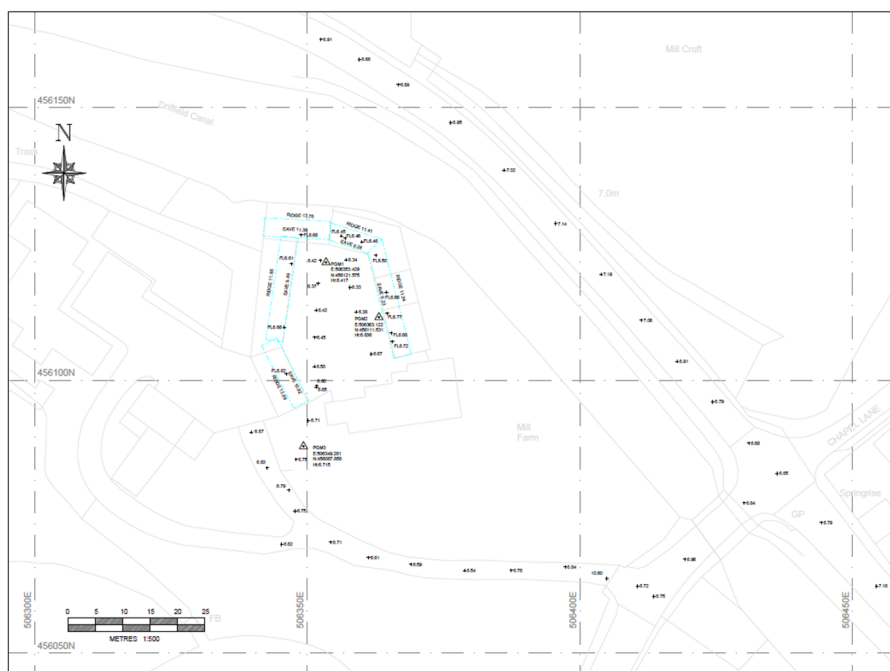


Environment Agency Flood Risk Map for Planning

The site is at greater probability of flooding, with 1% or greater annual probability of river flooding, or over 0.5% or greater annual probability of sea flooding in any year.

Flood zone 1 is located approximately 100m to the South approximately and to the north in the village of Wansford.

A topographical survey of the existing site along with spot levels along the main roads surrounding the site which are seen in Flood Zone 1, concluded a level of 7.000m AOD and above would be within flood zone 1. This shall be considered as part of the proposed mitigation to the property.



Extract from Topographical Survey

4.0 **Flood Risk Vulnerability Classification of the Proposed Development**

With reference to Table 2 of the NPPF technical guide³, the proposed use as residential is classified as ‘**More vulnerable**’.

With reference to Table 3 of the technical guide³, developments with ‘More vulnerable’ classifications within zone 3 are permitted developments.

Table 3: Flood risk vulnerability and flood zone ‘compatibility’

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	✗	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	✗	✗	✗

Key: ✓ Development is appropriate.
✗ Development should not be permitted.

Table 3 from NPPF Technical Guide³

4.1 **Requirements of the Flood Risk Assessment**

A detailed flood risk assessment has been requested by the council. Following a review of the Spatial Planning and Development Control Recommendation Matrix¹.

Finished floor levels to be set at 600mm above average site level or adjacent road frontage level, ‘design flood’ level or maximum historic flood level (if available), whichever is higher.

An additional 300mm flood proofing should also be provided. (Road frontage level defined as the average between the gutter and the crown of the road).

Section 6 onwards shall consider the flood risk to the site in detail and confirm that the development will be safe.

5.0 **Sequential & Test**

With reference to Technical Guidance of the NPPF³, the SFRA should form the basis for applying the Sequential Test.

Page 24 of the NPPF, paragraph 104 states

The proposed development is a conversion of existing outbuilding to form one residential dwelling, support for such developments is considered acceptable subject to appropriate mitigation against the present flood risk.

The Sequential Test is therefore passed.

5.1 Exception Test

NPPF Technical Guidance states that, on provision that the sequential test is passed, more vulnerable developments within flood zone 3a require an exemption test.

This exception test will detail how flood risk will be managed and show how the sustainable benefits of the development to the community outweigh the flood risk.

The proposed development shall retain and convert 5no existing outbuildings located at Mill Farm. The re-use of these old buildings provides a sustainable benefit extending the life of the building on brownfield land rather than new developments on greenfield.

The flood risk to the proposal will be mitigated, preventing flood risk to life and property. Detail of proposed mitigation is noted within section 6.0 & 7.0. Additionally, the development will not increase flood risk.

Therefore, the exception test is deemed satisfied.

6.0 Flood Risk

The following section will highlight flooding risk from the following areas;

1. Pluvial (Surface Water)
2. Fluvial (Rivers)
3. Historic
4. Reservoir

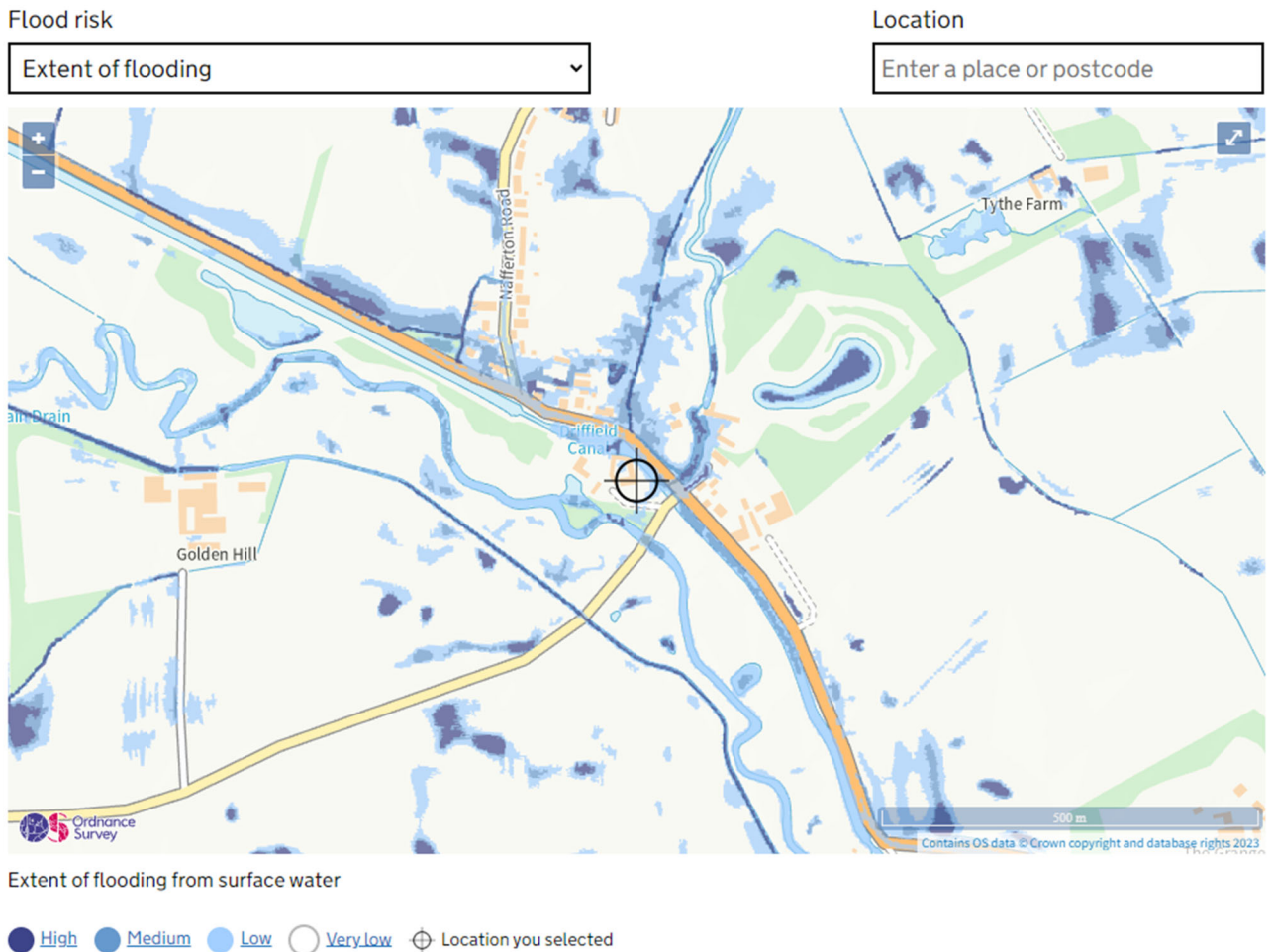
The following section will follow the structure of the headings above.

6.1 Pluvial Flooding

Surface water flood risk has been assessed on a national level by The Environment Agency. Maps were released in December 2013, which are some of the most comprehensive surface water flood risk maps in the world.

'The Surface Water mapping involves cutting edge technology, with flood experts using models to observe how rainwater flows and ponds. Then producing maps that take local topography, weather patterns and historical data into account.'

The extract below identifies surface water flooding risk to the site.



Environment Agency Surface Water Flood Risk Map

As shown above, the site is at 'very low' risk of surface water flooding. This means the site has less than a 0.1% chance of surface water flooding each year.

Therefore, the risk posed by surface water flooding is considered negligible.

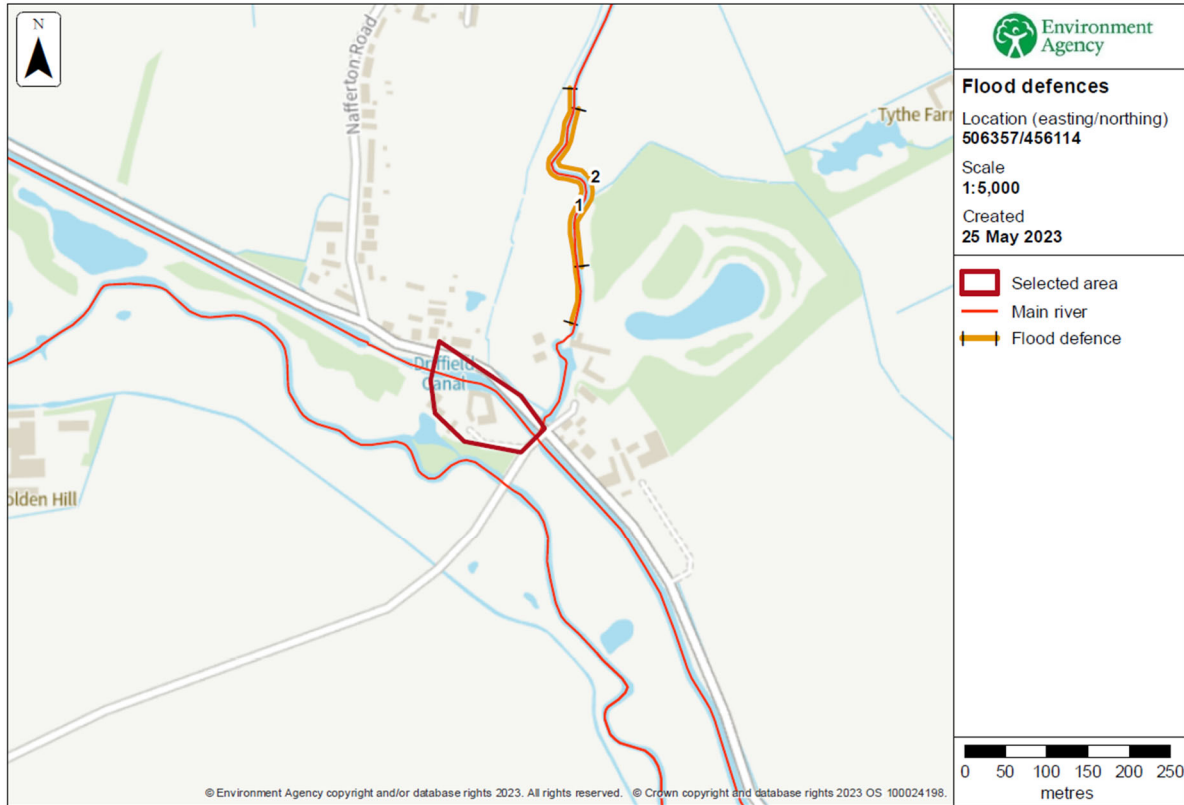
6.2 Fluvial Flooding

Potential sources of fluvial flooding include Driffield Canal along the northern boundary of the site which is noted to be locked upstream of the site.

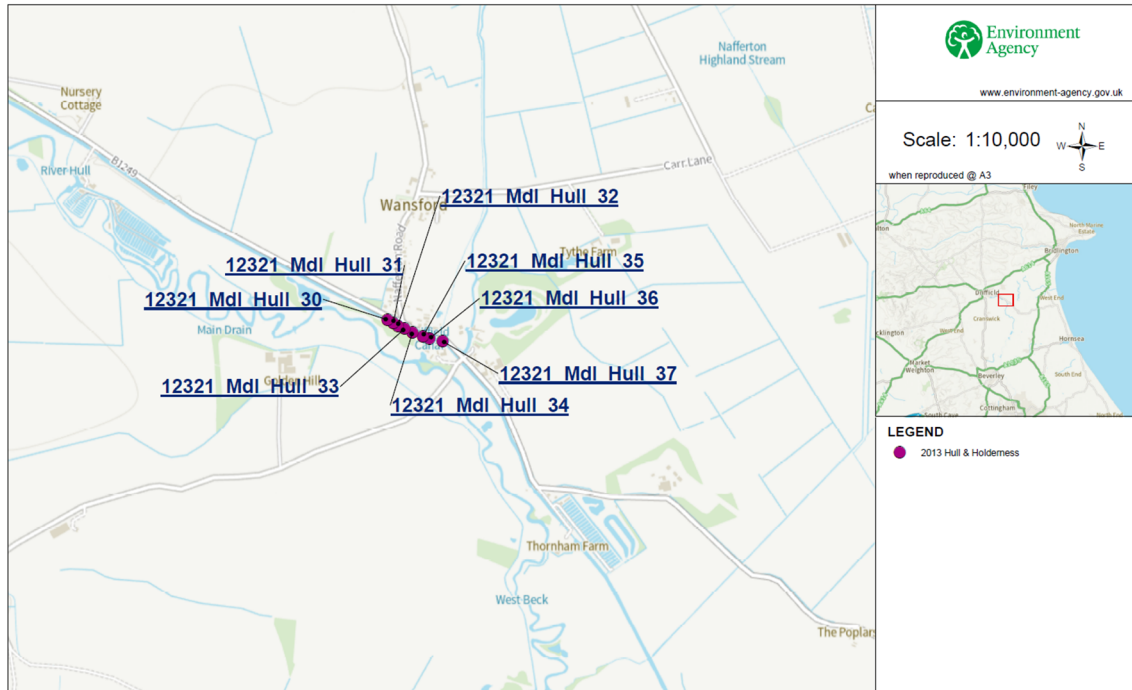
Nafferton Beck is located to the north flowing south into the Junction of Driffield canal downstream of the lock which becomes River Hull.

To the south of the site is River Hull / West beck flows west to east.

All three sources are open channel watercourse with limited above ground defences which are located along the length.



Environment Agency Asset Map

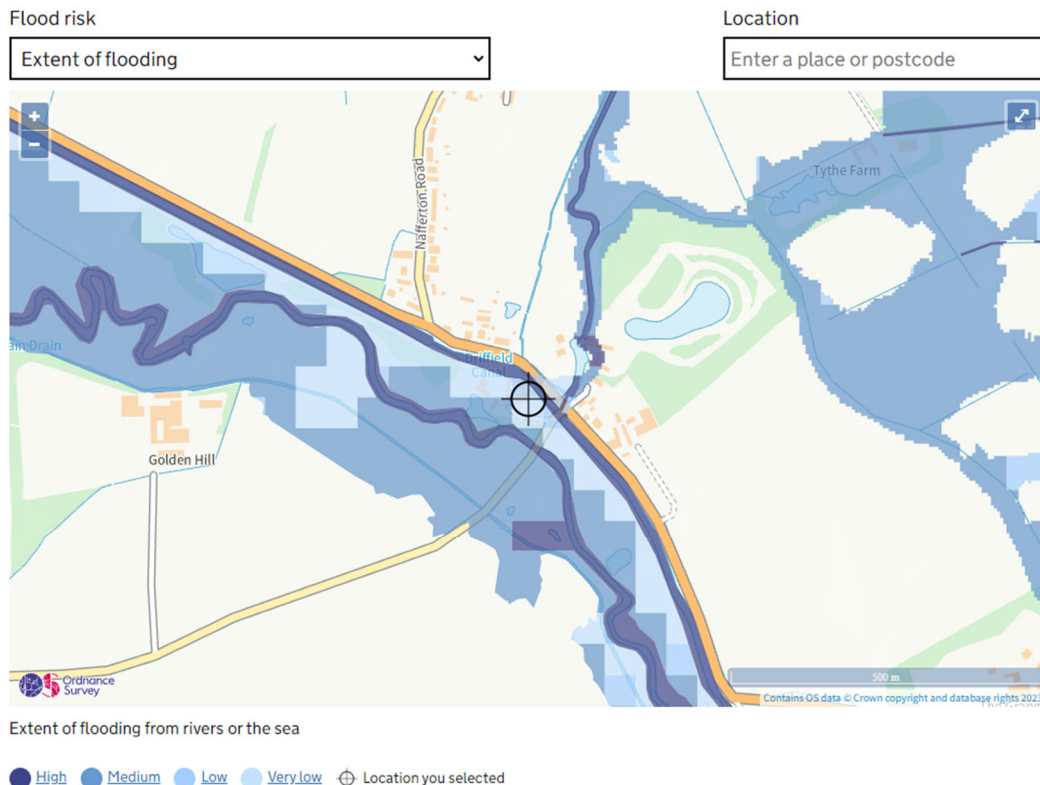


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Environment Agency Asset Map

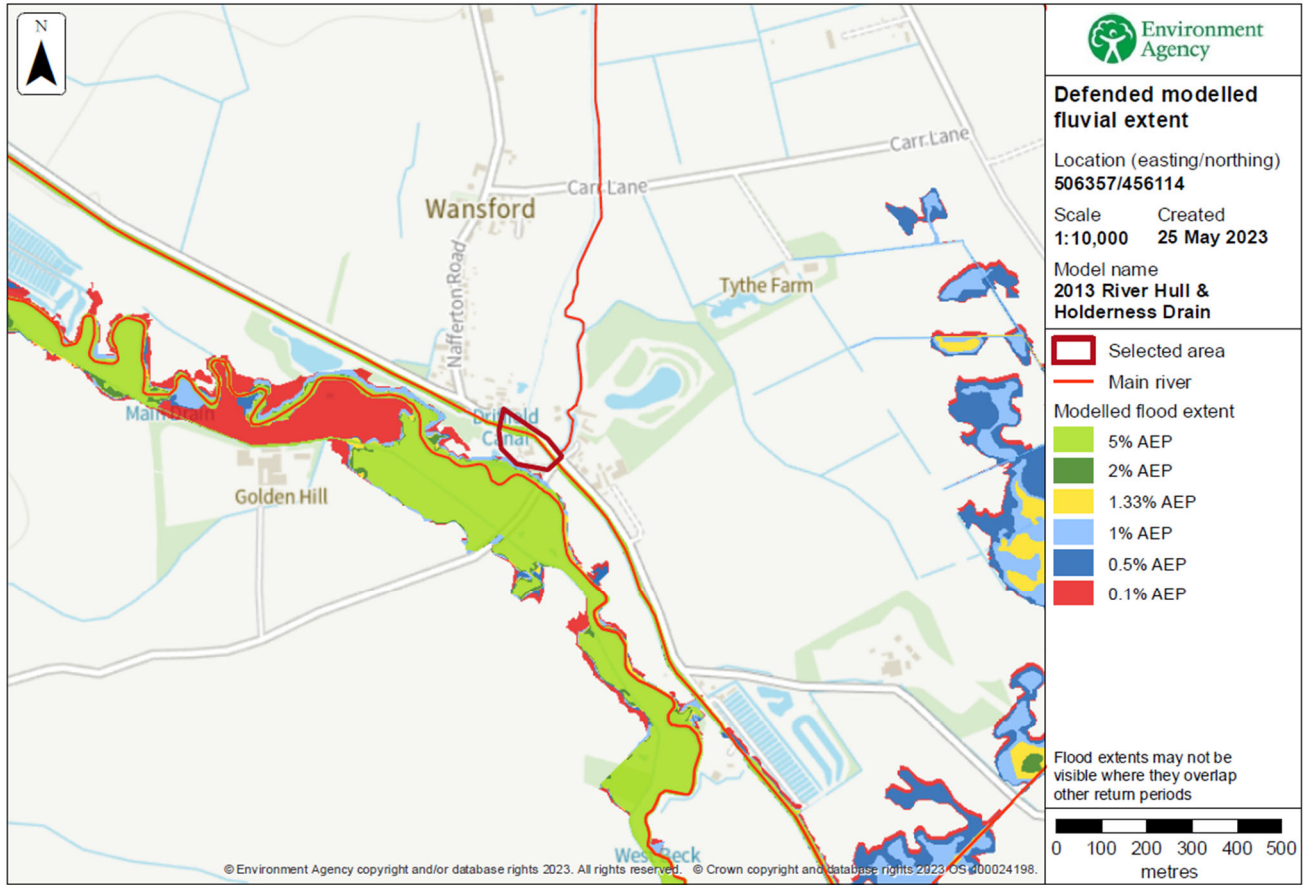
The lowest crest level along the Environment Agency embankment is identified as being 23.45m AOD. Therefore, as our proposed development has an approximate level of 22.65m AOD, the development is at theoretical risk of flooding from the overtopping of the embankment.

As shown within the Environment Agency river and sea flood risk map below, the proposed development is at 'very low' risk of flooding, resulting in a chance of flooding of less than 0.1% each year. This takes into account the effect of local flood defences.



Environment Agency River & Sea Flood Risk Map

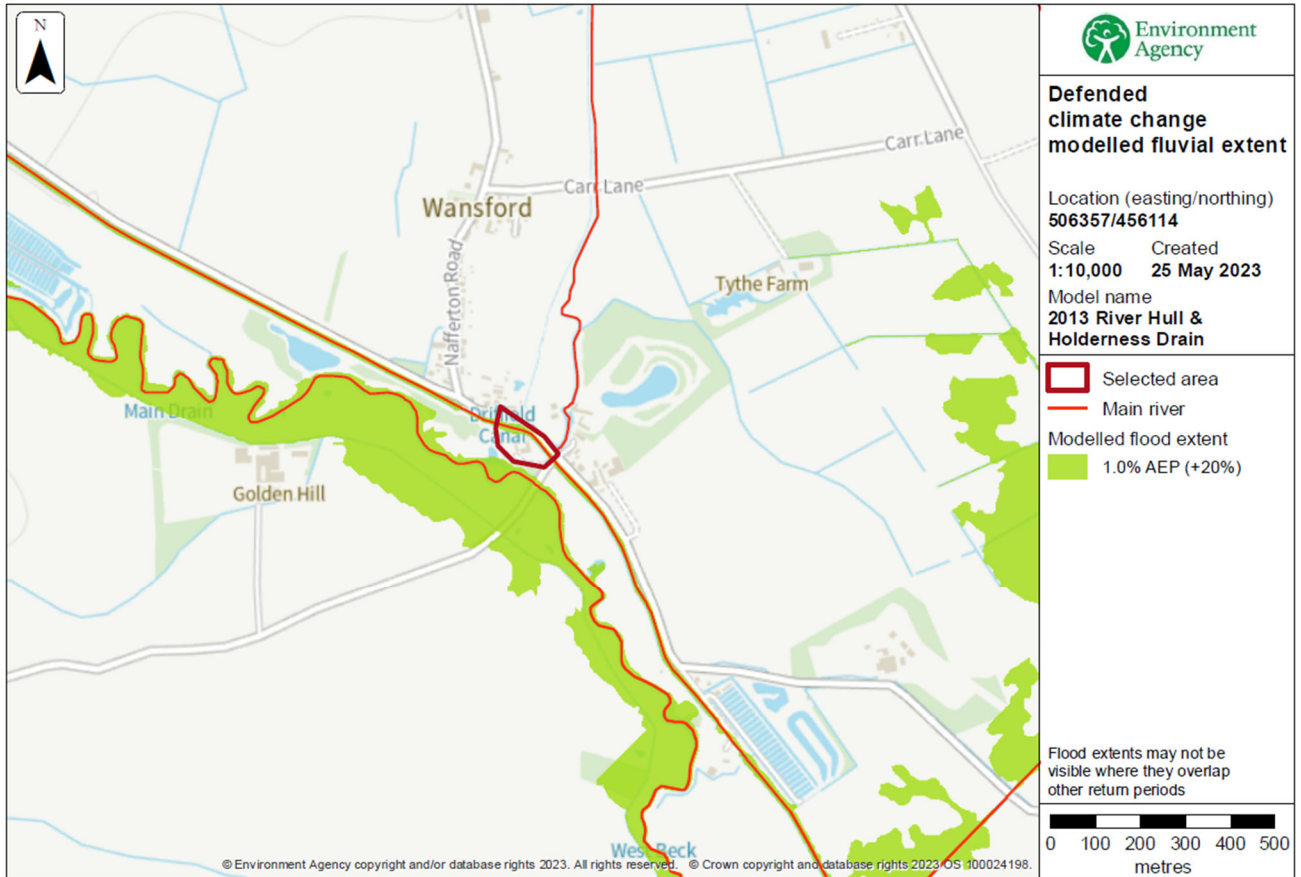
Fluvial flooding models of the River Hull & Holderness Drain have been undertaken for a variety of possible flooding events. The below Environment Agency flood risk map identifies the flooding extent of a defended fluvial model.



Environment Agency Defended Fluvial Map

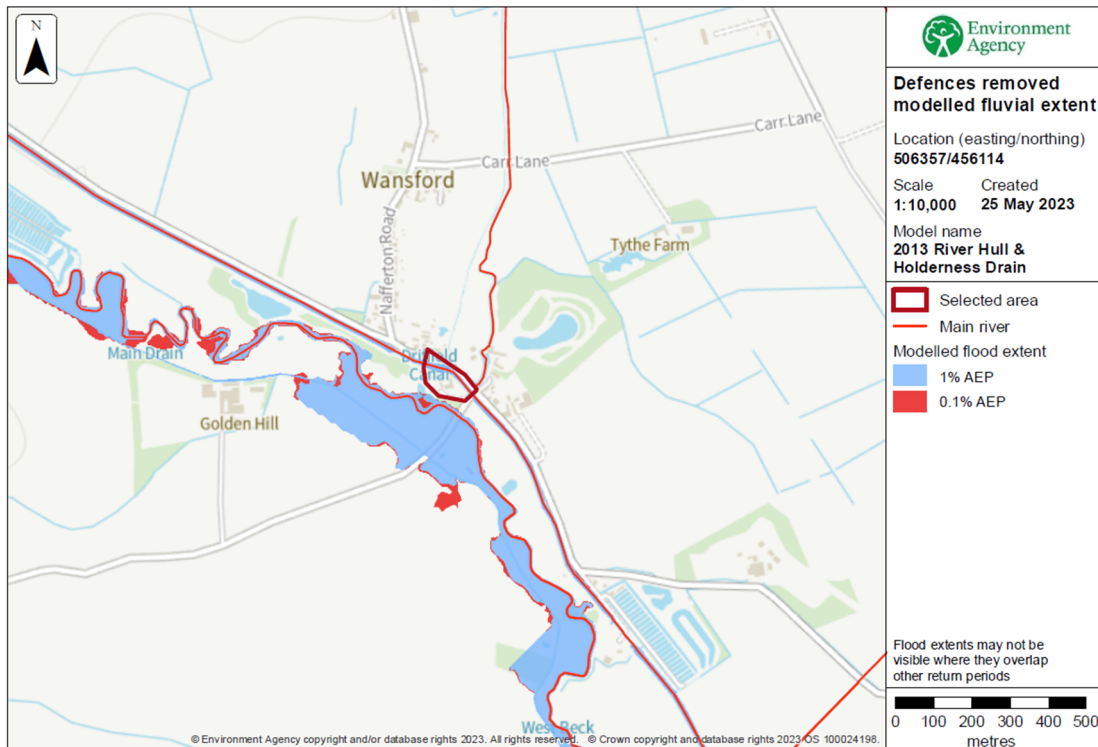
The development is shown not to be at risk of flooding in a 1:1000 year flood event (annual exceedance probability of 0.1%).

With the addition of climate change the flood model of a defended event is shown below. The development is shown not to be at risk of flooding in a 1:1000 year flood event (annual exceedance probability of 0.1%).



Environment Agency Defended Climate Change Fluvial Map

The Environment Agency flood risk model for rivers with no defences is shown below.



Environment Agency No Defences Flood Risk Map

As shown above, the development is not at risk of flooding from rivers with no defences. No available data with the addition of climate change has been provided by the EA. From the available mapping flood water is shown to head south rather than north to the proposed site.

Based on the assessment of Fluvial flood risk the site is at minimum risk. Therefore, the following mitigation is recommended to be incorporated in the redevelopment of the barns to residential use.

The existing finish floor levels vary from 6.450m – 6.720m AOD, it is recommended the floor levels are levelled out in each barn with flood protection measures incorporated.

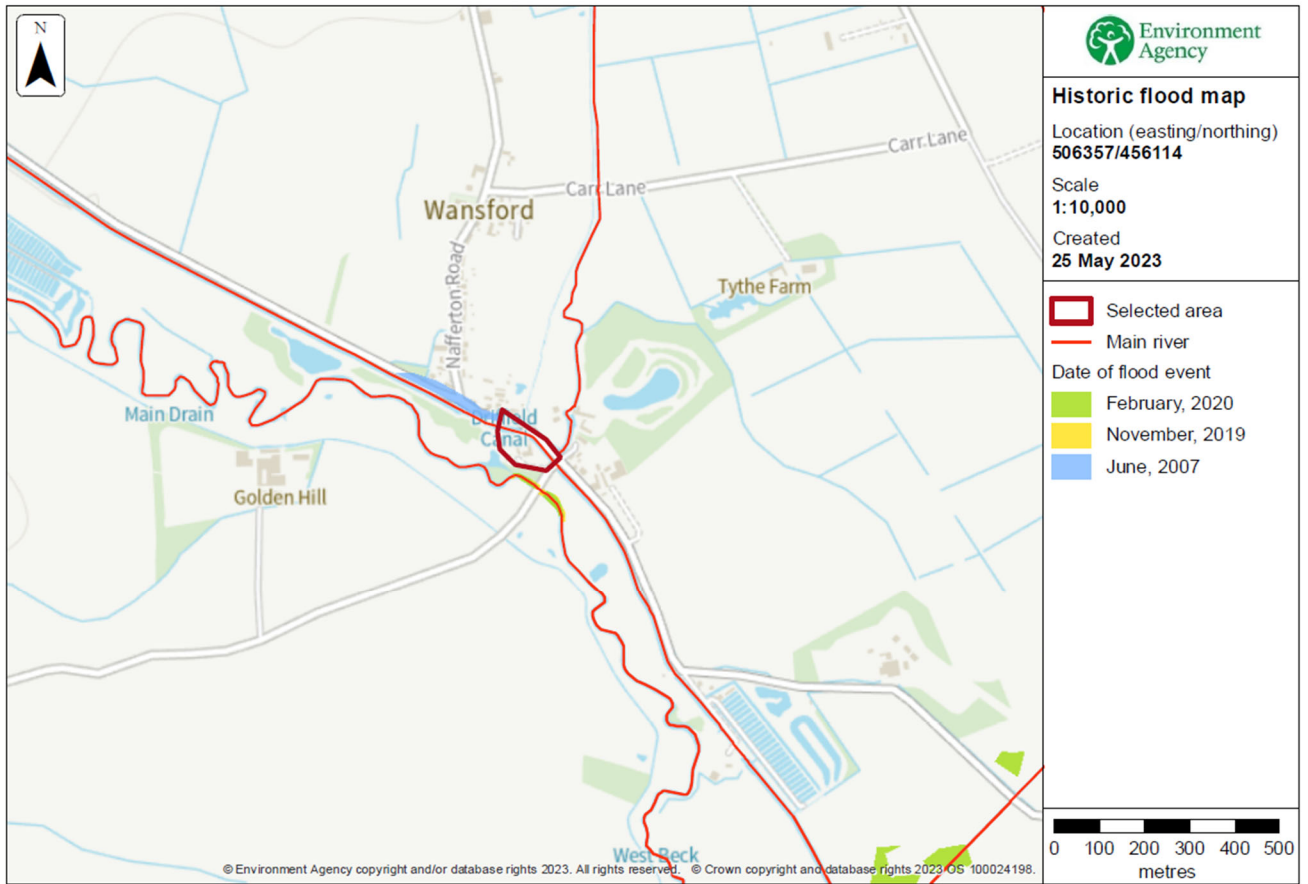
Water exclusion protection shall be provided up to 7.000m AOD with a further water entry strategy extended up to 7.300m AOD.

By complying with the above, the property shall be protected to a level which is equivalent to flood zone 1.

A place of safety is also recommended at first floor, this shall be well above any predicted flood event including climate change.

6.3 Historic Flooding

The Environment Agency historic flood map is shown below. As shown the development site has no previous history of flooding, even within severe storm events where defences were overtopped.



Environment Agency Historic Flooding Map

Historic flood event data

Start date	End date	Source of flood	Cause of flood	Affects location
15 February 2020	19 March 2020	main river	channel capacity exceeded (no raised defences)	No
8 February 2020	14 February 2020	main river	channel capacity exceeded (no raised defences)	No
7 November 2019	8 November 2019	main river	channel capacity exceeded (no raised defences)	No
25 June 2007	26 June 2007	unknown	unknown	Yes

Environment Agency Historic Flooding Event Data

This demonstrates that the development is at very low risk from fluvial and pluvial sources of flooding.

6.4 Reservoir Flooding

The Environment Agency reservoir flood risk map identifies that the development site is at risk of flooding from a reservoir during river flooding.

Flood risk

Extent of flooding

Location

Enter a place or postcode



Maximum extent of flooding from reservoirs:

● when river levels are normal ● when there is also flooding from rivers ⊕ Location you selected

Environment Agency Reservoir Flooding Map

From the above map the site is shown not to be affected by the risk of Reservoir flooding.

Therefore, the risk posed by Reservoir flooding is considered negligible.

7.0 **Summary and Recommendation**

The FRA demonstrates that the flood risk to the site from various sources is low, considering the site levels and existing FFL of the outbuildings.

The site is shown not to be at risk of flooding from fluvial flooding in a 1:1000-year event.

The sequential and exception test has demonstrated the development is acceptable and offers sustainable benefits over the potential flood risk.

The following mitigation shall be incorporated into the development,

	Existing FFL	Proposed FFL	Flood Proofing Level
Barn 1 =	6.620m AOD	6.620m AOD	7.300m AOD
Barn 2 =	6.618 – 6.610m AOD	6.618m AOD	7.300m AOD
Barn 3 =	6.680m AOD	6.680m AOD	7.300m AOD
Barn 4 =	6.450 – 6.460m AOD	6.620m AOD	7.300m AOD
Barn 5 =	6.500 – 6.720m AOD	6.720m AOD	7.300m AOD

Given the current construction it is deemed to be feasible to introduce the following Flood Proofing measures.

1. Plasterboard laid Horizontal up 7.300m AOD.
2. All electrical sockets and fittings shall be placed no lower than 7.300m AOD.
3. Any external airbricks shall be fitted with flood protection devices.
4. New floor finishes shall be tiles with water resistant grout.
5. All new internal drainage fittings shall be fitted with anti-flood valves.
6. Flood doors up to 7.000m AOD

It is recommended that the owner sign up to the Environment Agency flood warning system.
<https://www.gov.uk/sign-up-for-flood-warnings>

In addition, the owners should prepare a site flood plan. The template can be found below.
<https://www.gov.uk/government/publications/personal-flood-plan>

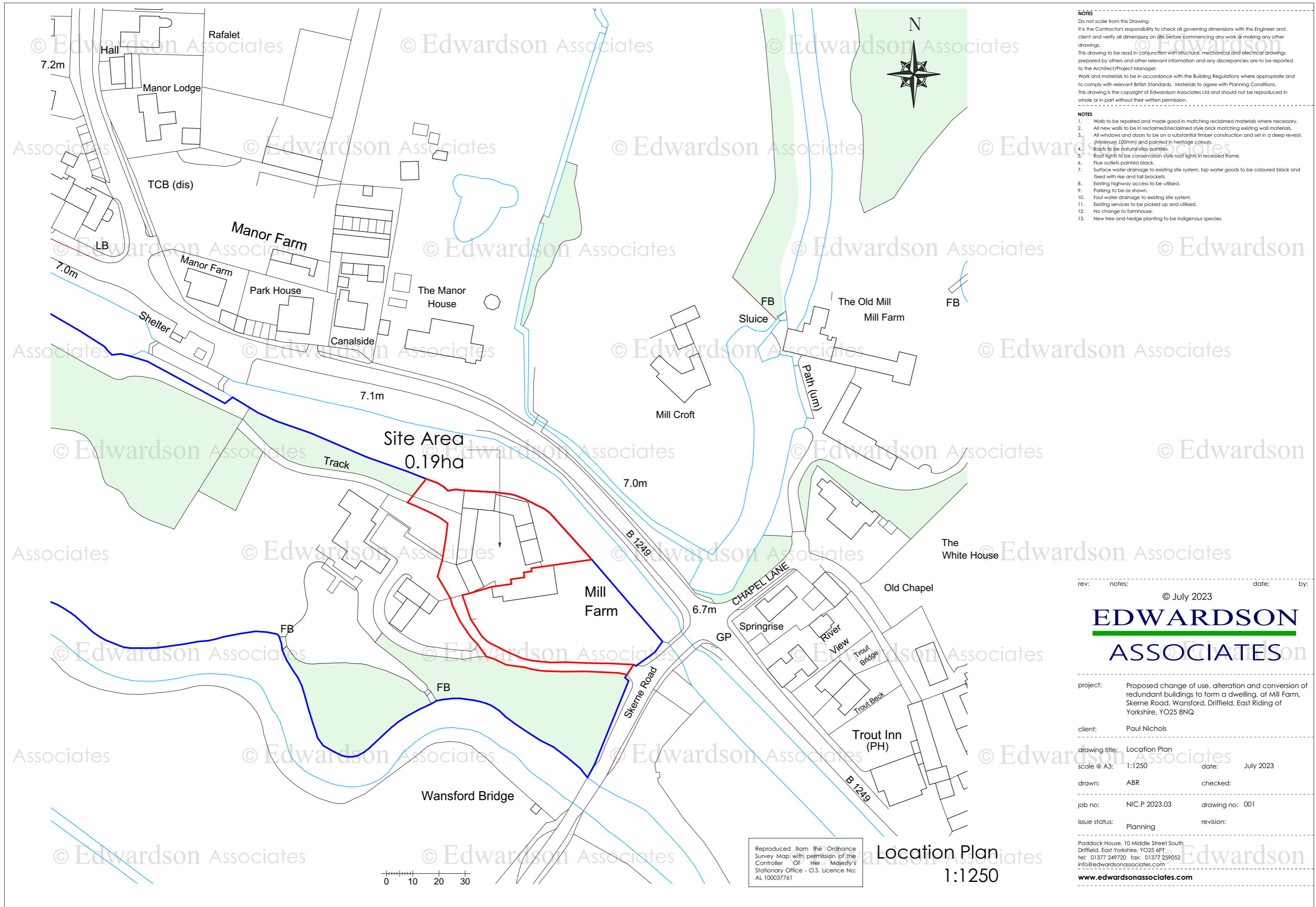
Report Checked by:-



J. H. Collins BSc. (Hons), MCIWEM

Associate Director – Principal Civil Engineer
Drainage & Infrastructure

APPENDIX I
Site Location Plan



NOTES
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- NOTES**
1. Walls to be repaired and made good in matching reclaimed materials where necessary.
 2. All new walls to be in reclaimed/reclaimed style brick matching existing wall materials.
 3. All windows and doors to be on a substantial timber construction and set in a deep reveal. (Minimum 100mm) and painted in heritage colours.
 4. Roofs to be natural clay pantiles.
 5. Roof lights to be conservation style roof lights in recessed frame.
 6. Flue outlets painted black.
 7. Surface water drainage to existing site system, top water goods to be coloured black and fixed with rise and fall brackets.
 8. Existing highway access to be utilised.
 9. Parking to be as shown.
 10. Foul water drainage to existing site system.
 11. Existing services to be picked up and utilised.
 12. No change to farmhouse.
 13. New tree and hedge planting to be indigenous species.

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project: Proposed change of use, alteration and conversion of redundant buildings to form a dwelling, at Mill Farm, Skerne Road, Wansford, Driffield, East Riding of Yorkshire, YO25 8NQ

client: Paul Nichols

drawing title: Location Plan
 scale @ A3: 1:1250 date: July 2023

drawn: ABR checked:

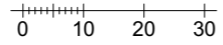
job no: NIC.P 2023.03 drawing no: 001

issue status: Planning revision:

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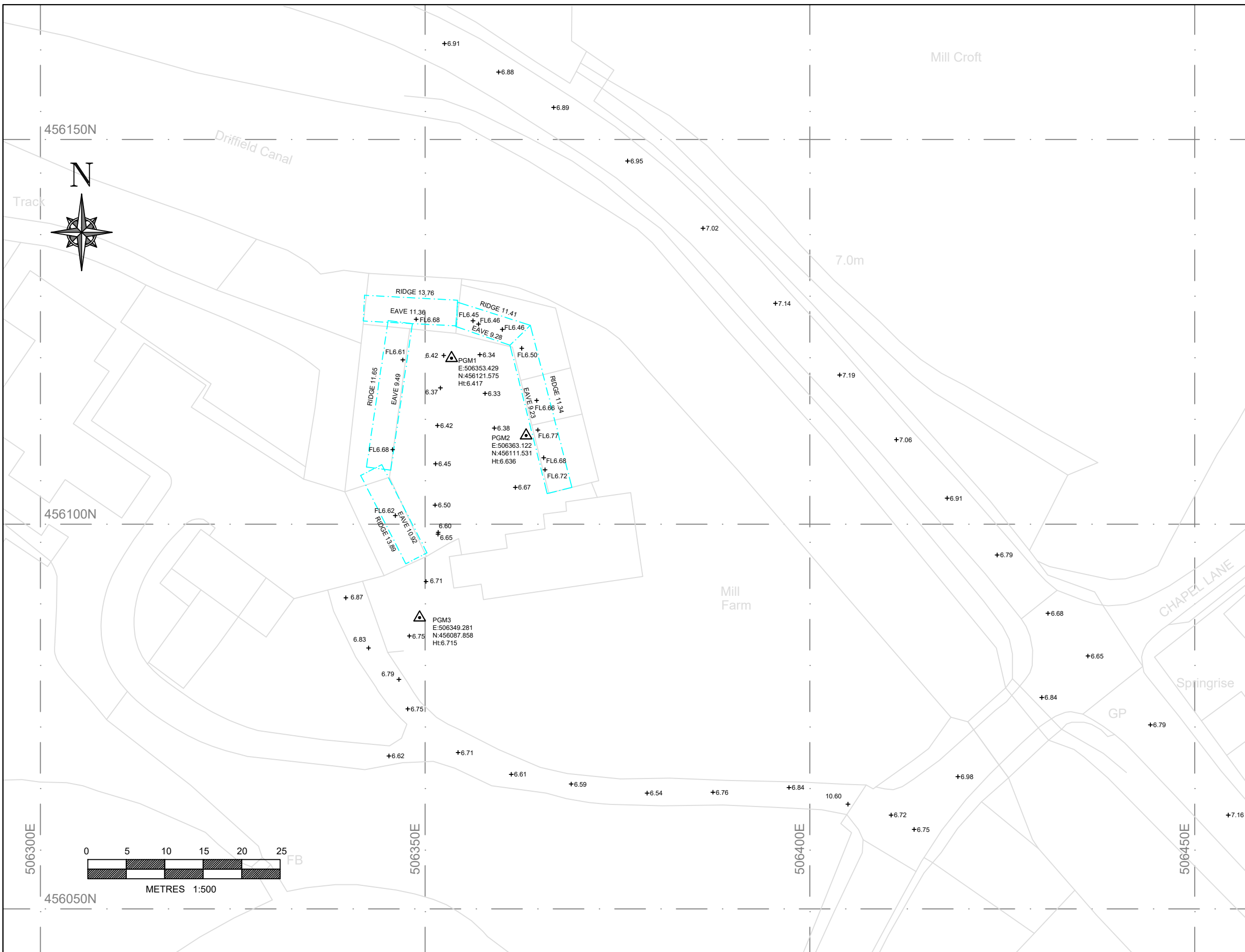
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Location Plan
 1:1250



APPENDIX II
Site Topographical Survey

REV A	DATE ISSUED 09/06/23	SURVEYED AM	DRAWN JL	CHECKED DBe
DESCRIPTION FIRST ISSUE				
<u>LEGEND</u>				
+ 111.71	—	SPOT LEVELS		
	—	PERMANENT GROUND MARKER		
	—	BUILDING (3D)		
	—	INFORMATION FROM PROMAP		
<u>ABBREVIATIONS</u>				
FL	—	FLOOR LEVEL		



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GENERAL NOTES:
LEVELS ARE RELATED TO O.D. (NEWLYN)
CO-ORDINATES ARE RELATED TO NATIONAL GRID
DERIVED VIA GPS - OSGB36(15) SYSTEM

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PROJECT
**MILL FARM
WANSFORD**

TITLE
TOPOGRAPHICAL SURVEY

SCALE	1:500	DRAWN	JL
DATE SURVEYED	08/06/23	CHECKED	DBe
DATE ISSUED	09/06/23	APPROVED	KS
ORIGINAL SIZE	A3	DRAWING NUMBER	06_230539_01
		REV	A

APPENDIX III
Site Layout



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 12. No change to farmhouse.
 13. New tree and hedge planting to be indigenous species.

KEY

- TARMAC
- CRUSHED STONE/GRAVEL
- PAVING
- CONCRETE
- REDUNDANT BUILDINGS
- SURROUNDING BUILDINGS
- GRASS
- EXISTING MATURE TREES
- HEDGE
- FOUL TO EXISTING SITE SYSTEM



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client: Paul Nichols

drawing title: Site Plan - As Existing
 scale @ A3: 1:500 date: July 2023

drawn: ABR checked:

job no: NIC.P 2023.03 drawing no: 002

issue status: Planning revision:

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Site Plan - As Existing
 1:500



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KEY

[Pattern]	TARMAC
[Pattern]	CRUSHED STONE/GRAVEL
[Pattern]	PAVING
[Pattern]	CONCRETE
[Pattern]	REDUNDANT BUILDINGS
[Pattern]	SURROUNDING BUILDINGS
[Pattern]	GRASS
[Symbol]	EXISTING MATURE TREES
[Symbol]	HEDGE
[Symbol]	FOUL TO EXISTING SITE SYSTEM
[Symbol]	NEW HEDGE PLANTING
[Symbol]	NEW TREE PLANTING

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client: Paul Nichols

drawing title: Site Plan - As Proposed
 scale @ A3: 1:500 date: July 2023

drawn: ABR checked:

job no: NIC.P 2023.03 drawing no: 101

issue status: Planning revision:

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Site Plan - As Proposed
 1:500

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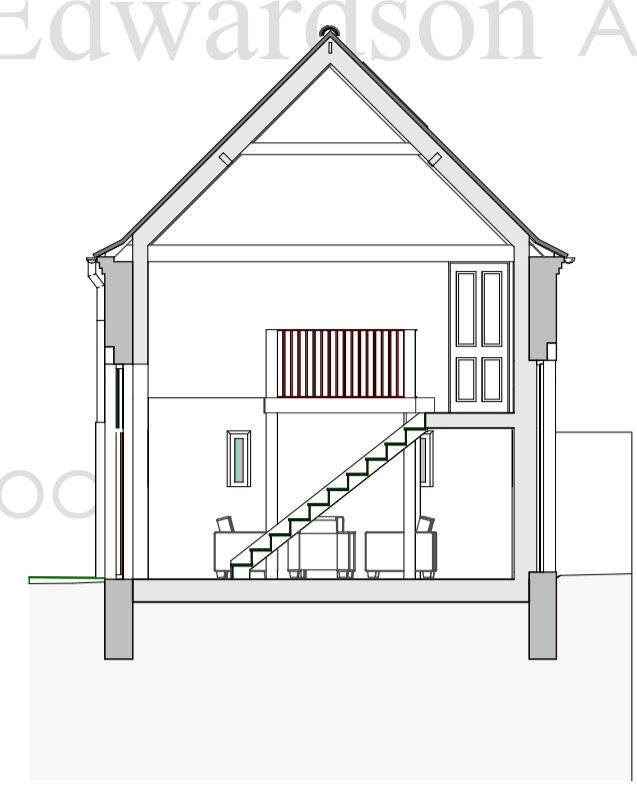
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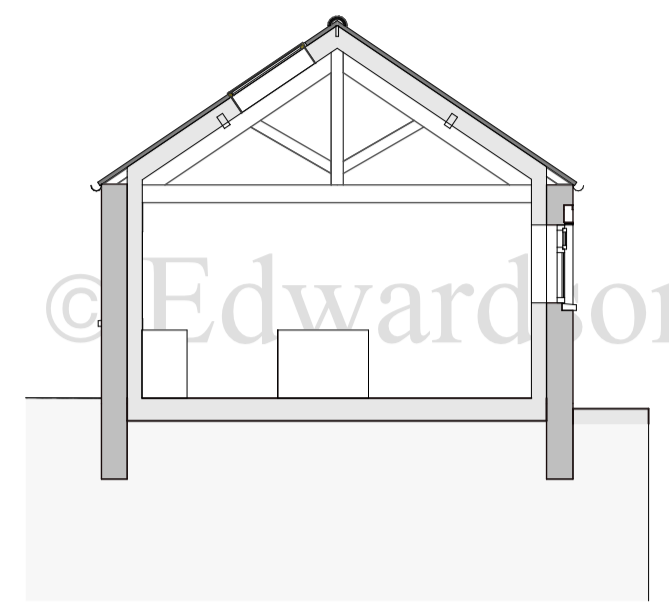
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Ground Floor Plan 1:100



Section A 1:100



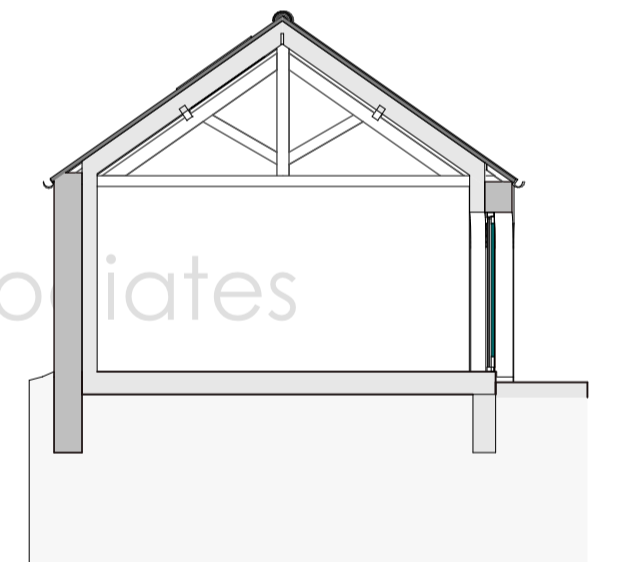
Section B 1:100



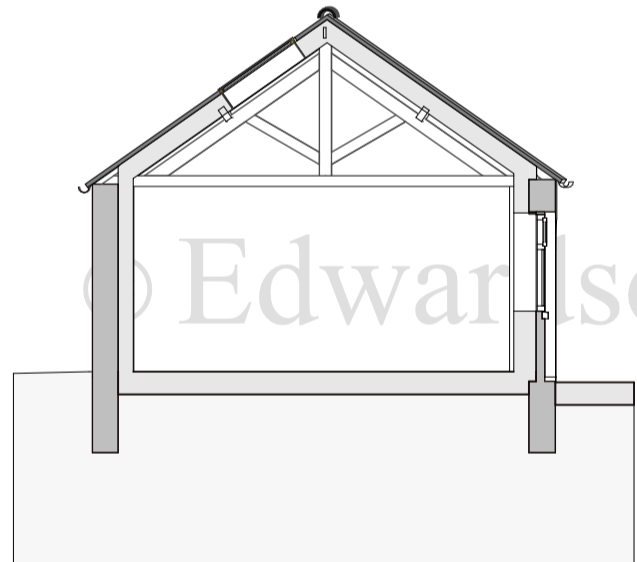
Section C 1:100



Section D 1:100



Section E 1:100



Section F 1:100

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project: Proposed change of use, alteration and conversion of redundant buildings, to form a dwelling, at Mill Farm, Skerne Road, Wansford, Driffield, East Riding of Yorkshire, YO25 8NQ
 client: Paul Nichols

drawing title: Ground Floor Plan, Sections - As Proposed

scale @ A1: 1:100 date: July 2023

drawn: ABR checked:

job no: NIC.P.2023.03 drawing no: 102

issue status: Planning revision:

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