FLOOD RISK ASSESSMENT
FOR RESIDENTIAL DEVELOPMENT AT
TOWN END MANOR, SPALDING

FINAL REPORT

ECL0498/ HENDRY

DATE MAY 2021

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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 Mr & Mrs Hendry in respect of a development that consists of one residential dwelling at Town End Manor, Spalding.

A planning application for the proposed development is to be submitted.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is located at Town End Manor, London Road, Spalding, Lincolnshire, PE11 2TP. The National Grid Reference of the site is 52424/32145.

The location of the site is shown in Figure 1.

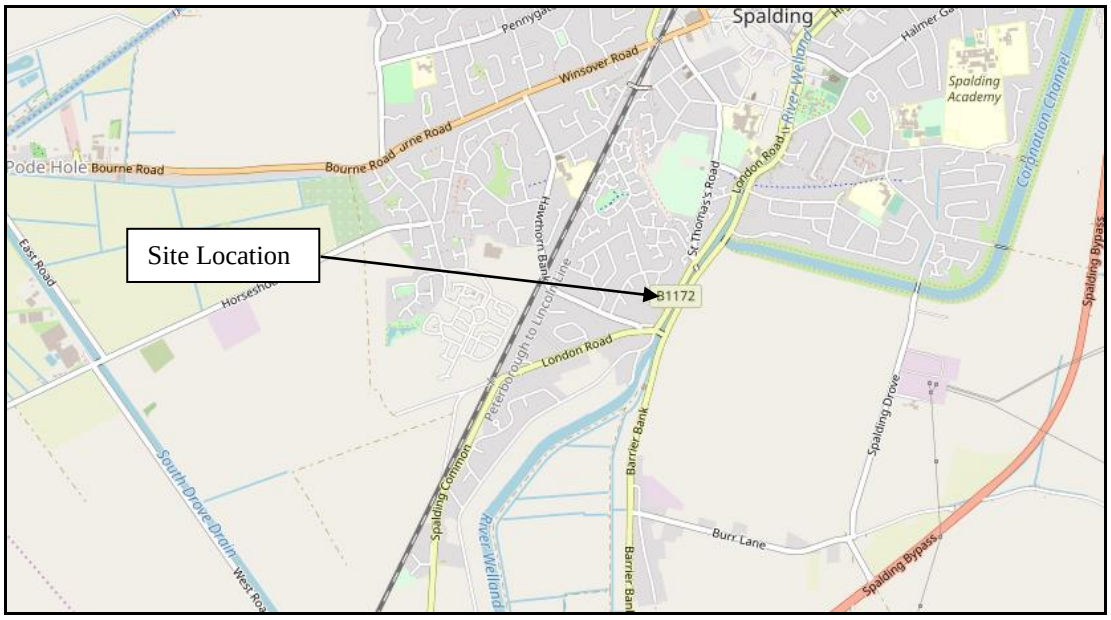


Figure 1 – Location Plan (© OpenStreetMap contributors)

2.2 Existing Site

The site is on the northern side of Town End Manor to the west of 137 London Road. The site is L shaped and consists of the access to Town End Manor and allotments. The area of development is approximately 0.08 hectares.

A topographic survey of the site has been undertaken and is provided in Attachment 1. Ground levels within the site are typically between +2.5m OD and +3.0m OD. At the entrance to the site, Town End Manor is at a level of +3.7m OD. Ground levels within the site access reduce from the +3.7m OD to +3.0m OD.

The site is in the Welland and Deepings Internal Drainage Board (IDB) District. The site and the surrounding land are within the Urban Spalding catchment and the nearest IDB watercourse is 180m south of the site.

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

2.3 Proposed Development

The proposed development consists of a residential dwelling. The dwelling will be two storey and use the existing access to Town End Manor. A Site Plan is 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 Available Flood Risk Information

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

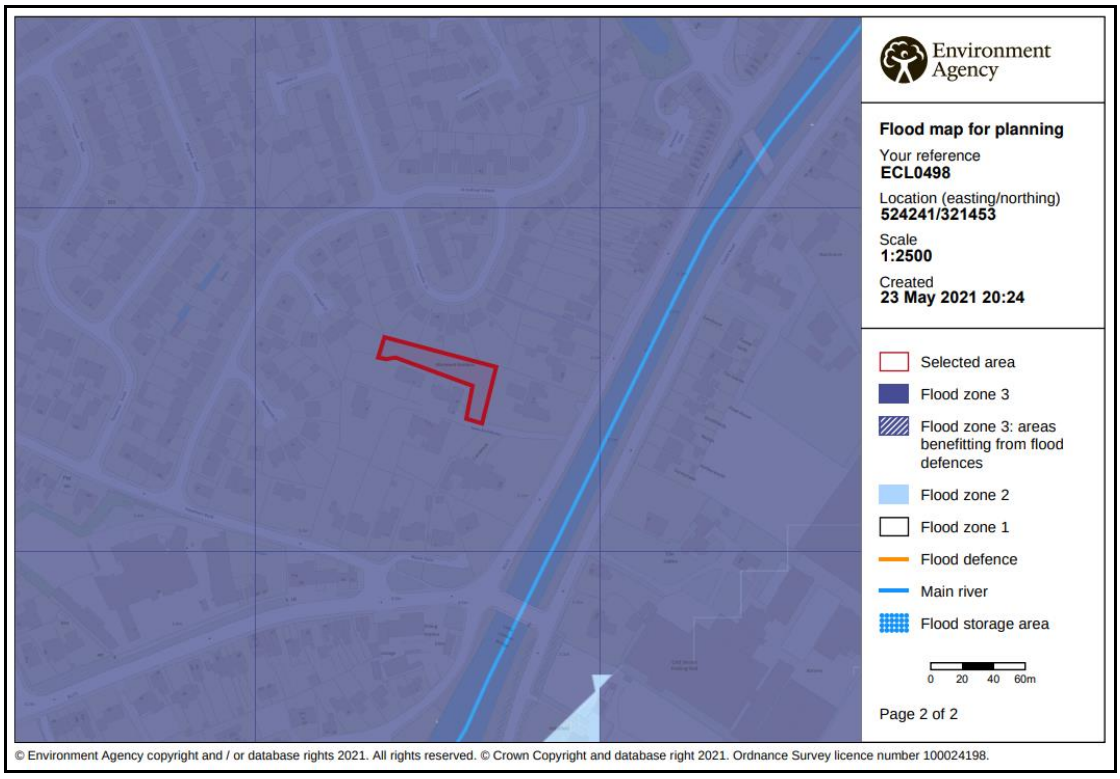


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

- the site has a medium risk of flooding (annual probability between 1% and 3.3%);
- part of the site has a low risk of surface water flooding (annual probability between 0.1% and 1%) with potential flood depth less than 0.3m; and
- the site is within an area at risk of reservoir flooding.

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

SFRA Map	Present Day	2116
Residual Flood Hazard Map for the 1% fluvial and 0.5% tidal event	The site is outside of the 'Low Hazard' area	The site is outside of the 'Low Hazard' area
Residual Peak Depth Map for the 1% fluvial and 0.5% tidal event	The site is outside of the area at risk of flooding	The site is outside of the area at risk of flooding

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 residential care homes 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 and Exception Test

It is for the Local Planning Authority, taking advice from the Environment Agency as appropriate, to consider the Sequential Test.

Large parts of the South Holland district close to the River Welland lie within Flood Zone 3. As such, opportunities to undertake the development at an alternative site with a lower flood risk are limited and there are no known sites available for development in the limited areas of lower flood risk. In this context it is noted that SE Lincolnshire Local Plan residential allocations are within flood risk areas due to the lack of availability of sites within areas of lower flood risk.

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 1% fluvial or 0.5% tidal event. The site therefore has a low probability of flooding and is considered to pass the Sequential Test.

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

The Local Plan has a target of a net increase of at least 11,681 dwellings in South Holland over the 25-year local plan period. The Plan considers this new housing is

required to ensure the sustainability of the Local Plan area. The proposed development will contribute to this target.

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 80m west of the River Welland as it flows through Spalding. The site is 400m south west of the inlet to the Coronation Channel, a bypass channel of the River Welland. The embankments of the Coronation Channel were constructed in the 1950's to convey river flows around Spalding. The Coronation Channel together with the Crowland and Cowbit Washes offer flood reduction to Spalding and the surrounding district.

The River Welland tidal defences are downstream of the confluence of the Coronation Channel and River Welland, however, these defences provide benefit downstream of Spalding and not to the town. The Cowbit Washes, Coronation Channel and River Welland tidal defences 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 Welland and Deepings IDB. The site and the surrounding land are within the Urban Spalding catchment and drain in a westerly direction to Pode Hole Pumping Station. Pode Hole Pumping Station discharges to Vernatts Drain which flows into the River Welland at Surfleet.

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 Welland and Deepings 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:

- surface water flooding;
- local blockages to the Welland and Deepings IDB main drain system;
- an event in the local drainage network that exceeds the standard of protection;
- failure of Pode Hole Pumping Station; and
- overtopping and / or breaching of the River Welland defences.

4.3 Probability of Flooding

Part of the site is at risk of surface water flooding during the 0.1% annual probability (1 in 1000 chance each year) event with depths up to 0.3m. The site is not at risk of surface water flooding during the 1% annual probability (1 in 100 chance each year) event.

The probability of flooding associated with blockages in the Welland and Deepings IDB drainage system is low due to the maintenance standards achieved and managed by the IDB.

The standard of drainage provided by Welland and Deepings IDB is assessed at 2% annual probability (1 in 50 chance each year), compatible with the Department of the Environment, Food and Rural Affairs (DEFRA) target level of service for rural drainage and flood defence works. The risk associated with flooding due to events greater than 2% annual probability (1 in 50 chance each year) is lowered due to the Welland and Deepings IDB high priority watercourses incorporating a freeboard. This provides storage during events greater than 2% annual probability (1 in 50 chance each year).

The Coronation Channel and the Cowbit Washes protect the site from the River Welland. These flood relief measures provide protection 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. Previous historic rainfall events of 1968 and 1978, estimated to be greater than 1% annual probability (1 in 100 chance each year), caused no flooding to any residential properties.

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.

The River Welland 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 in and around Spalding site should a breach occur in the defences. The South East Lincolnshire SFRA includes maps demonstrating the impact of a breach in 2116. The Residual Peak Depth maps within the SFRA indicate

the maximum flood depths associated with a breach and overtopping of defences during a 1% fluvial and 0.5% tidal event. These show that the site is not at risk.

5.0 FLOOD RISK MITIGATION

5.1 Summary of Risks

Part of the site has a low risk of surface water flooding with depths up to 0.3m. The probability of this development flooding from localised drainage systems is low. Failure of Pode Hole Pumping Station could lead to an increased level of risk at the site.

The site benefits from any Environment Agency defences that provide protection during 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. 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 a breach in the defences. The maps show that the site is not at risk.

The proposed arrangement 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

Based upon the information available during the preparation of this flood risk assessment, to mitigate against the risk of flooding it is recommended that the floor level is 0.3m above ground levels with 0.3m of flood resilient construction above finished floor level.

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 provides a Flood Warning Service which includes Flood Warning Codes and uses direct warning methods where the risks and impacts of flooding are high.

In addition to direct and indirect flood warnings, the Environment Agency operates a 24 hour a day Floodline Service providing advice and information on flooding. The occupant should register with the Floodline Direct Warnings Service to receive any future flood warnings.

The risk of flooding is also mitigated by the proposed development having two storeys. Sleeping accommodation will be on the first floor above the potential flood level.

Should there be a failure of Pode Hole Pumping Station 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.

It is recommended that surface water run-off is managed so that stormwater from the development will not affect any adjoining properties 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 residential dwelling at Town End Manor, Spalding.

- The proposed development is in Flood Zone 3. The site benefits from defences on the River Welland that provide protection during 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 including climate change. The site is not at risk during a breach of the defences.

- The site is located within an Internal Drainage Board catchment with a minimum standard of drainage of 2% annual probability (1 in 50 chance each year) which accords with DEFRA guidelines for rural development. The risk of flooding is lowered further due to the Welland and Deepings IDB high priority watercourses incorporating a significant freeboard. This provides storage during events greater than 2% annual probability (1 in 50 chance each year).

- The Environment Agency Long Term Flood Risk Maps show that there is a low risk of surface water flooding with depths up to 0.3m.

- It is recommended that the floor level is 0.3m above ground level with 0.3m of flood resilient construction above finished floor level.

- The development passes the Sequential Test and Exception Test and is therefore suitable for the proposed location.

ATTACHMENT 1

TOPOGRAPHICAL SURVEY
(Dwg 24021/01)

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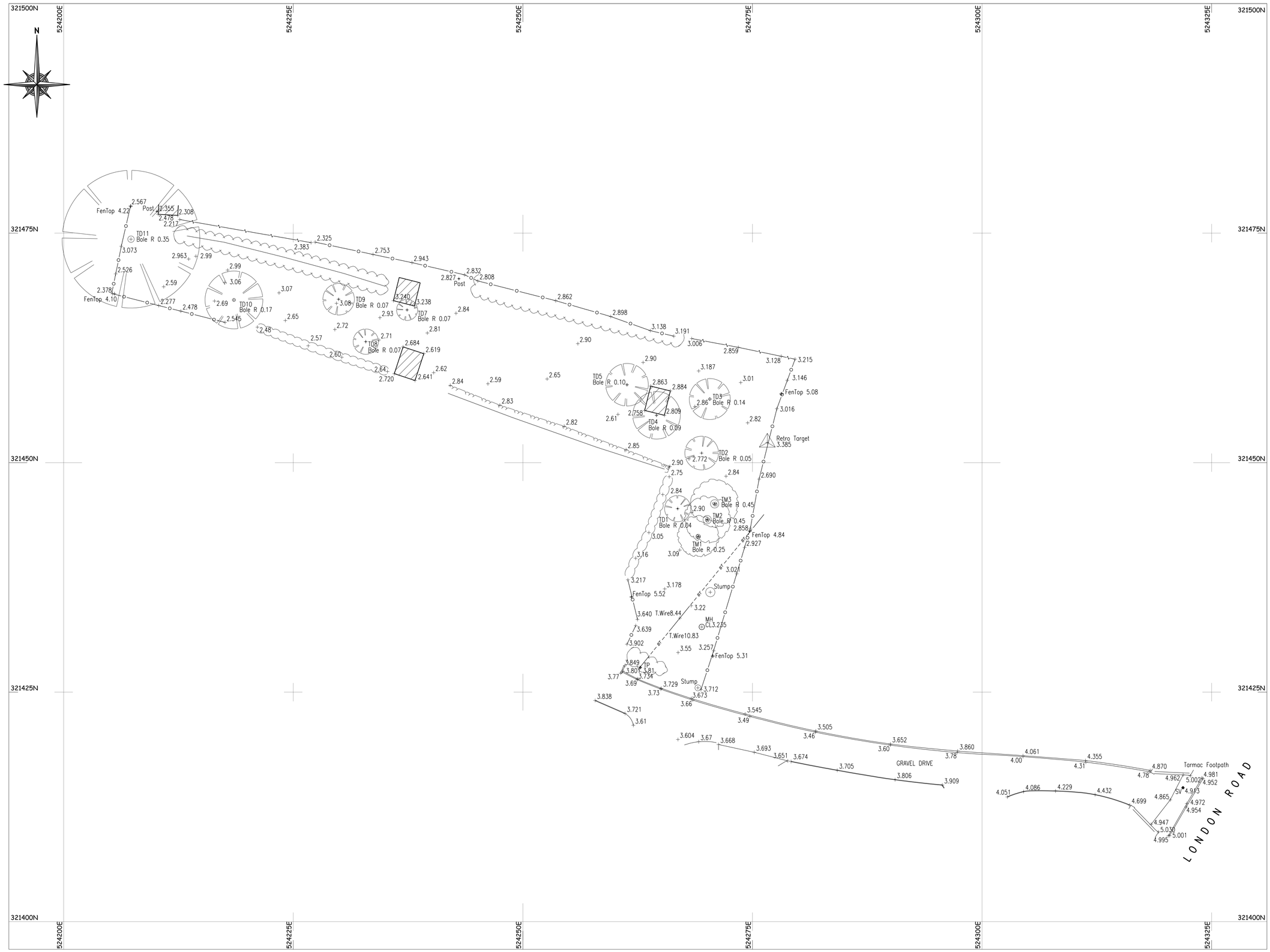
SURVEY STATIONS				
Name	Easting	Northing	Height	Remark
0141	524276.618	321452.193	3.385	Target on Fence

The survey grid is the National Grid obtained from ETRS89 GPS Coordinates with OSTN15 transformation. Levels shown to Ordnance Survey datum using ETRS89 GPS with OSGM15 transformation.

Surveyed boundary features are not necessarily legal boundaries

All utilities have been identified to the best of the surveyors knowledge. The correct identification can not be 100% guaranteed and should be independently verified prior to use in any design or building works.

Services covers, gullies and other features may be obscured by parked vehicles, leaf litter, building materials, waste and dense vegetation etc.



Rev	Date	Remarks

Status: FOR INFORMATION

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Project: Topograpical Survey At Town End Manor, Spalding, Lincs, PE11 2TP

Title: Topographical Survey

Date	Apr .2021	Scale	1:200 @A1
Drawn	JA	Checked	AS
Design	SRC	File Name	24021-01

DRG No. 24021/01 Rev -

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ATTACHMENT 2

SITE BLOCK PLAN
(DWG 4001 P601)



North

Site Block Plan

1 : 500

10m 50m

Existing Foul Drainage

Clean water (pressumed)

Existing Underground Electrical Cable

Site Boundary
Area = 1190.5m² approx.

Development Boundary
Area = 225m² approx.

Trees and Hedges to remain

Trees and Hedges to be removed

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Rev	Description	Date

STATUS: PURPOSE OF ISSUE — PLANNING

DESIGNER: PE MA DESIGN CONSULTANCY

CLIENT: Rebecca & Matthew Hendry

PROJECT: New 2 storey single family dwelling. Town End Manor - Spalding

TITLE: Site Block Plan

DRAWN BY	CHECKED BY	DATE
GM	PE MA	17.05.2021

SCALE	SHEET	PATH
1 : 500	A3	C:\Users\User\Documents\Projects\Hours\4001_Spalding Town End Manor Allotment\4001_PE_MA_ZZ_M3_A_0001_New Build Family Dwelling WCD.rvt

DRAWING NUMBER: 4001 P601 — REV: