FLOOD RISK ASSESSMENT
FOR RESIDENTIAL DEVELOPMENT AT
LITTLE LONDON, SPALDING

FINAL REPORT

ECL1143/ANDREW M WRIGHT LTD

DATE NOVEMBER 2023

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(Dwg 22402-22-01)

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(Dwg 062203 PD01)

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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 J Reeves in respect of a development that consists of three residential dwelling at The White House, Little London, Spalding.

A planning application for the proposed development is to be submitted by Andrew M Wright Ltd.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is located at The White House, 76A Little London, Spalding, Lincolnshire, PE11 2UF. The National Grid Reference of the site is 52381/32120.

The location of the site is shown in Figure 1.

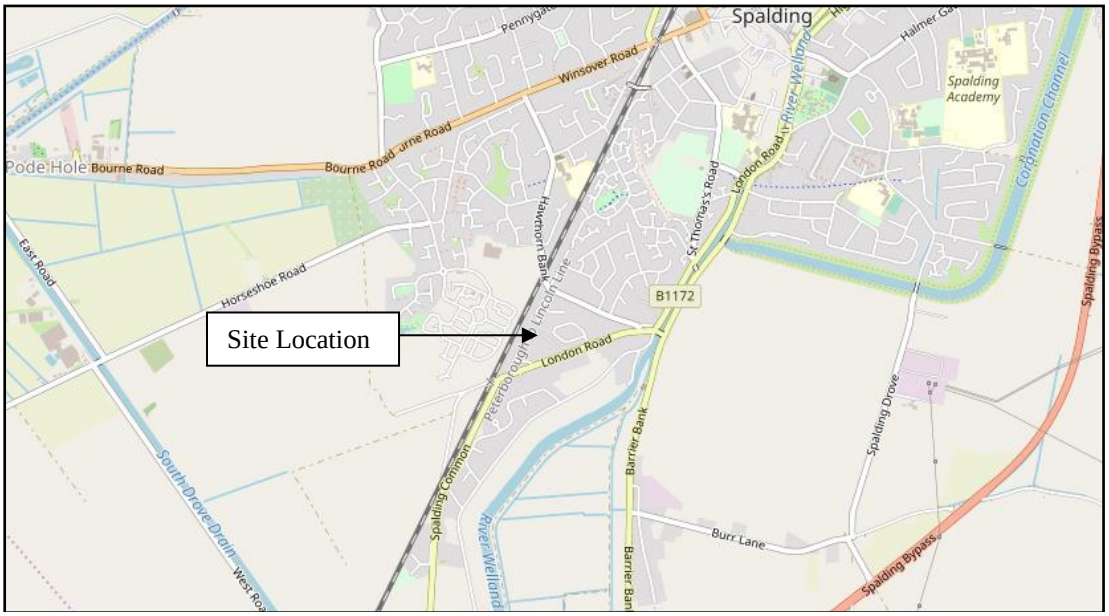


Figure 1 – Location Plan (© OpenStreetMap contributors)

2.2 Existing Site

The site is on the northern side of Little London road. The site is within the curtilage of a residential dwelling, The White House. The site forms part of the garden of The White. The area of the proposed development is 0.12ha.

A topographic survey of the site has been undertaken and spot levels are shown in Attachment 1. Ground levels within the site are between +2.8m OD and +3.0m OD. The carriageway level of Little London road adjacent to the development is +3.6m 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, Little London Pipeline, is 100m 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 three residential dwellings. The dwellings will have two storeys. A Site Plan is provided in Attachment 1.

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

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.

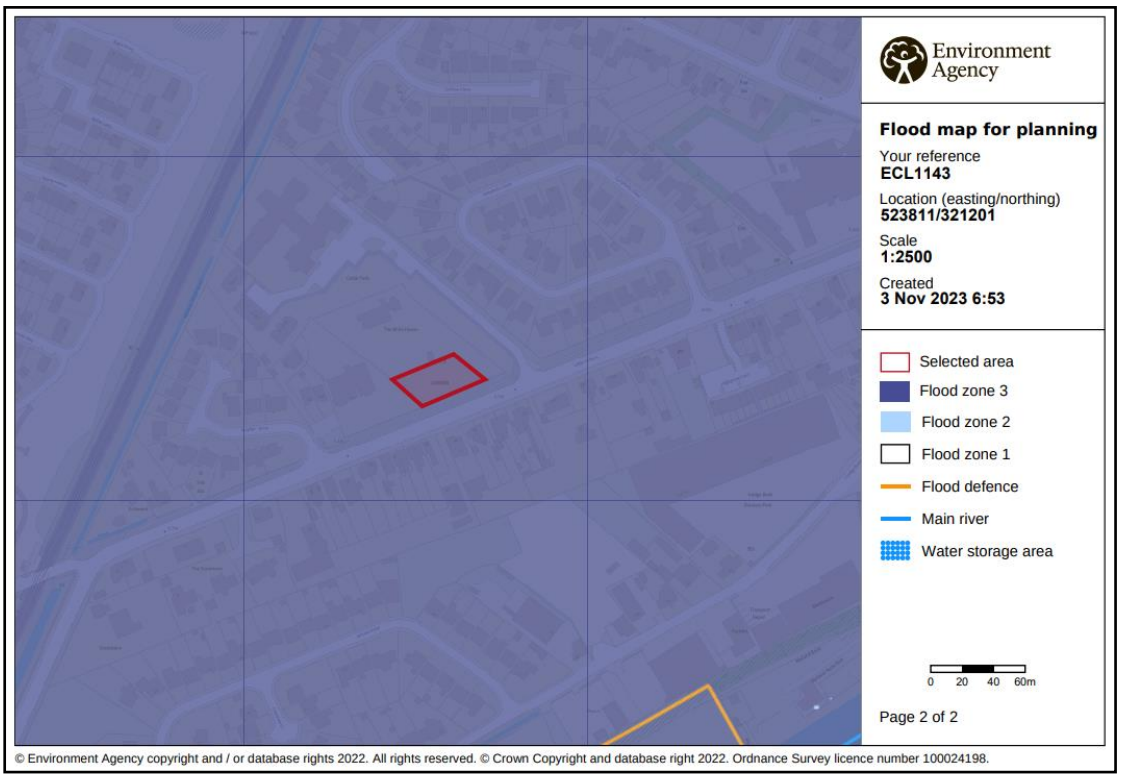


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

- the site has a very low risk (annual probability less than 0.1%) of flooding from rivers or the sea;
- the site has a low risk of surface water flooding (annual probability between 0.1% and 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.

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, 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 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 300m west of the River Welland as it flows through Spalding. The site is 900m 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

A summary of the sources of flooding is provided in Table 2.

Source of Flooding	Level of Risk

Drainage Network Flooding	The risk is assessed in Section 4.3.
Surface Water Flooding	Based upon the EA maps the risk is very low/low.
Fluvial Flooding	The risk is assessed in Section 4.3 and 4.5.
Tidal Flooding	The site is not at risk of tidal flooding.
Reservoir Flooding	Based upon the EA Maps the site is not at risk of reservoir flooding.
Groundwater Flooding	There is no evidence to suggest the site is at risk of groundwater flooding.

Table 2 – Sources of Flooding

4.3 Probability of Flooding

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.

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 Welland and Deepings IDB main drains incorporating freeboard. This freeboard provides storage during the exceedance events.

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

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, it is recommended that the floor level of the dwellings is 0.3m above ground level. It is recommended that there is 0.3m of flood resilient construction above finished floor level.

The risk of flooding is lowered as the proposed dwellings will have 2 storeys with all sleeping accommodation on the first floor.

The developer should ensure that the eventual occupiers of the dwellings are 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 occupiers of the dwelling should register to receive flood warnings.

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 using 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 three 2 storey residential dwellings at The White House, 76A Little London, Spalding.

- 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 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.

- It is recommended that the floor level of each dwelling is 0.3m above ground level and there is 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

TOPOGRAPHIC SURVEY
(Dwg 22402-22-01)

LOCATION PLAN, SITE PLAN AND FLOOR PLANS
(Dwg 062203 PD01)



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Notes :

This plan should only be used for its original purpose. SV Surveying Ltd accepts no responsibility for this plan if supplied to any other party other than the original client.

All dimensions / levels should be checked on site prior to design and construction.

Drainage information (where applicable) has been visually inspected from the surface and should be treated as approximate only.

Tree information (where applicable) has been surveyed from ground level and therefore should be treated as approximate only.

Contours are drawn at 0.2m intervals

The survey has been fixed to GPS OSGB 1936 using the active GPS network.

Legend:

	Building Canopy / Overhang	Trig	Trig Pillar
	Buildings / walls	Ridg	Ridge Level
	Kerb line	Eave	Eave Level
	Concrete edge	DPC	Dpc Level
	Centre Line	FL	Floor Level
	Barrier	Soff	Soffit Level
	Hedge	TiBo	Control Box
	Security Fence	LP	Lamp Post
	Panel Fence	SP	Sign Post
	Open Fence	post	Post
	Overhead Powerline	FS	Flag Staff
	Chambers	Mrk	Gas Marker
STN1	Survey Station & Name	EP	Electric Post
BM 120.00	Bench Mark	TP	Telegraph Post
		Invt	Pipe Invert
TBM 120.00	Temporary Bench Mark	GU	Gully
		RP	Rodding Point
SAP	Tree / Sapling	BT	Bt Cover
		CO	Cover Unknown
	Area Of Undergrowth	EC	Electricity Cover
		FH	Fire Hydrant
	Gate	GAS	Gas Cover
		SV	Stop Valve
IC	Inspection chamber	TV	Tv Cover
CL	Cover level	WM	Water Meter
IL	Invert level	BB	Bellisha Beacon
Inv Ø0.25	Pipe invert (diameter)	bol	Bollard
Gy	Gully	BS	Bus Stop
Bg	Back Gully	ER	Earthing Rod
MH	Manhole	Box	Post Box
		MS	Mile Stone
		TL	Traffic Light
		GV	Gas Valve
		PEG	Peg

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Project

ANDREW WRIGHT LTD
THE WHITE HOUSE

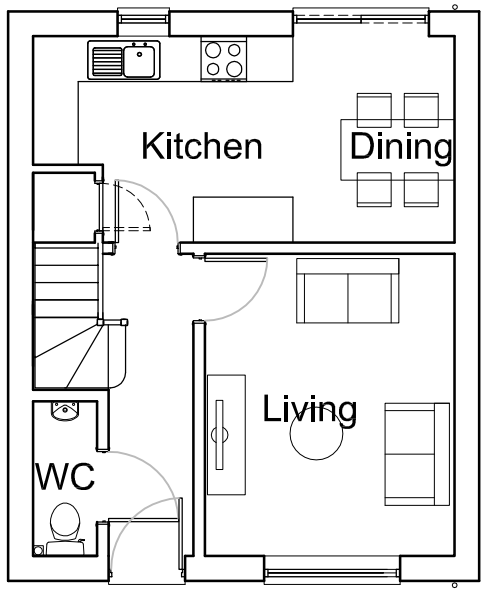
Drawing

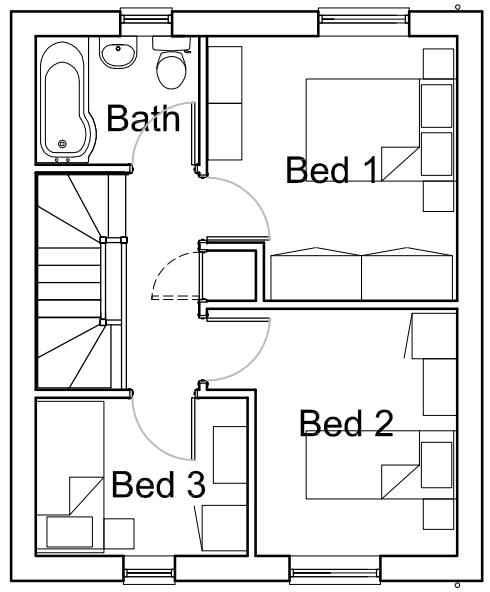
TOPOGRAPHIC SITE SURVEY

Scales	Drawn/Paper Size
1:200	SF/A1
Survey Date	**Drawing No**
02/12/2022	22402-22-01

DO NOT SCALE

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Ground Floor

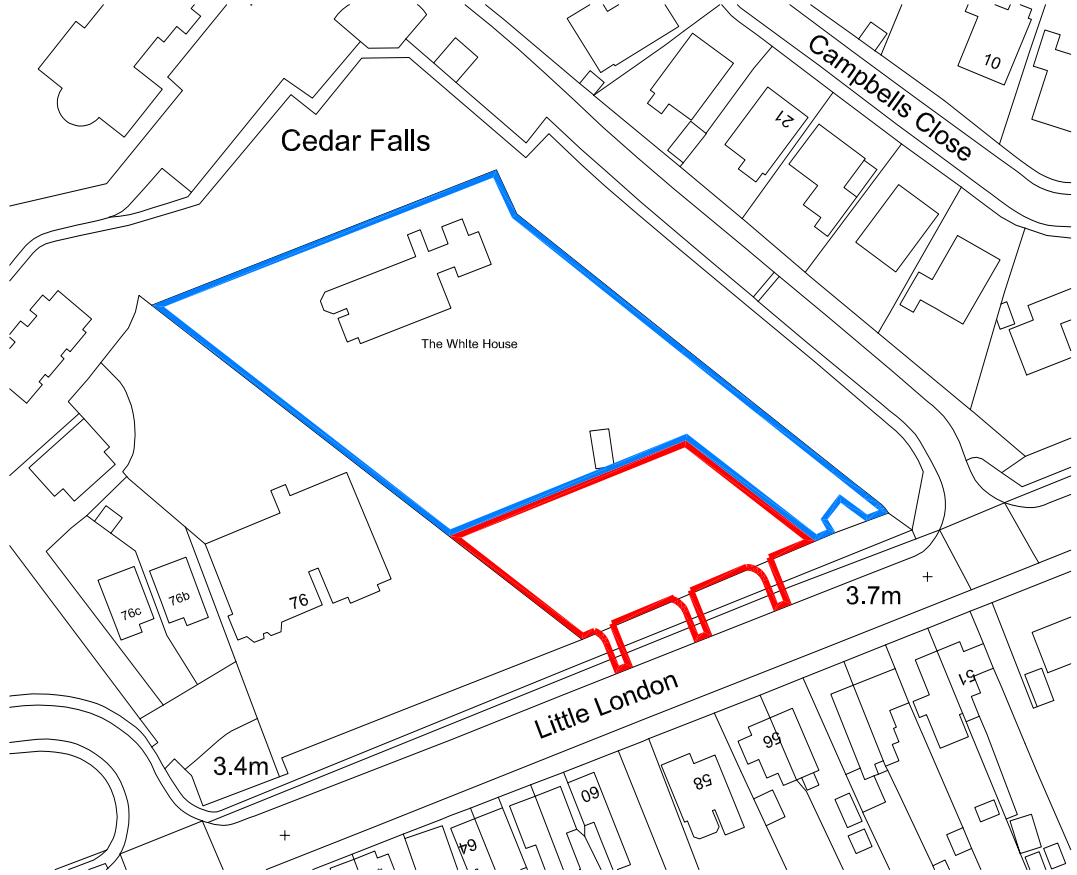
First Floor

Indicative Floor Plans (1:100)

0 1 2 3 4 5m



Indicative Site Plan (1:500)



Location Plan (1:1250)

All dimensions to be verified on site by Main Contractor before the start of any shop drawings or work whatsoever either on their own behalf or that of sub-contractors.

Report any discrepancies to the Contract Administrator at once.

This drawing is to be read with all relevant Architect's and Engineer's drawings and other relevant information.

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LEGEND: DO NOT SCALE

Revision:	Date:	Description:	Drw:	Chk:
D1	25.10.23	Draft Issue	AMW	AMW

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Project:
The White House
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Spalding

Drawing Title:
Location Plan, Indicative Site Plan & Indicative Floor Plans

Client:
Mr J Reeves

Drawn:	Checked:	Date:	Scale:	Paper Size:
AMW	AMW	06.10.23	As shown	A3

Job No.:	Dwg No.:	Stage:	Revision:
062203	PD01	Planning	D1