FLOOD RISK ASSESSMENT

Proposed Change of Use of an Agricultural Barn
to Residential Use
Rectory Farm
Great Fen Road
Boston.
PE21 7PB

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FLOOD RISK ASSESSMENT FOR PROPOSED CHANGE OF USE OF AN AGRICULTURAL BARN TO RESIDENTIAL USE, RECTORY FARM, GREAT FEN ROAD, BOSTON. PE21 7PB

INTRODUCTION

The Government has placed increasing priority on the need to take full account of the risk associated with flooding at all stages of the planning and development process. This seeks to reduce the future damage to property and the risk to life from incidents of flooding. Their expectations relating to flooding are contained in the National Planning Policy Framework Feb 2019, (NPPF), which identifies how the issue of flooding is dealt with in the drafting of planning policy and the consideration of planning applications by avoiding inappropriate development in areas at risk from flooding and to direct development away from areas at highest risk.

The NPPF provides that development in areas at risk of flooding should be avoided and seeks to direct development away from areas at highest risk. There is a sequential, risk-based approach to the location of development avoiding where possible, flood risk to people and property managing any residual risk and taking account of the impacts of climate change.

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APPLICATION SITE

The proposed site is located at Rectory Farm, Great Fen Road, Boston, PE21 7PB within the administrative area of Boston Borough Council. The National Grid Reference is TF29368 44191 **Plan 1**

This flood risk assessment has been prepared for a detailed planning application for the change of use of a redundant agricultural barn to residential use. **Plans 2 3 & 4**

The Site would be classed as Non-Major Development applying the National Planning Policy Guidance (NPPG) as the site is to be developed for less than 10 dwellings.

The National Planning Policy Framework Guidance NPPG defines three levels of flood risk depending upon the annual probability of fluvial flooding occurring.

Zone 1 – Low Probability (<0.1%)

Zone 2 – Medium Probability (0.1 – 1.0%)

Zone 3 – High Probability (>1.0%)

The proposed development site is shown mainly to be within Flood Zone 3 High Probability' as detailed on the Environment Agency's Flood Zone Maps **without defences**, and as defined in Table 1 of NPPG**. Map1**

Table 1: Flood Zones Definition

Flood Zone 3- High Probability
Definition Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year. The water-compatible and less vulnerable uses of land are appropriate in this zone. The highly vulnerable uses should not be permitted in this zone. The more vulnerable and essential infrastructure uses should only be permitted in this zone if the Exception Test is passed. Essential Infrastructure permitted in this zone should be designed and constructed to remain operational and safe for uses in times of flood Flood Risk Assessments requirements All proposals in this zone should be accompanied by a Flood Risk Assessment. Policy aims Developers and local authorities should seek opportunities to: • reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage techniques. • relocate existing development to land with a lower probability of flooding. • create space for flooding to occur by allocating and safeguarding open space for flood storage.

Applying the Flood Risk Vulnerability Classification in Table 2 of NPPG, the proposed residential use for the site is classified as “More Vulnerable,” Table 1 of NPPG states that such uses are permitted in this zone, subject to the exceptions test.

Table 2: Flood Risk Vulnerability Classification

More Vulnerable
• Hospitals • Residential institutions such as residential care homes, children’s homes, social services homes, prisons, and hostels. • Buildings used for: dwelling houses; student halls of residence; drinking establishments; nightclubs; and hotels • Non-residential uses for health services, nurseries, and educational establishments • Landfill and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravan and camping, subject to a specific warning and Evacuation Plan.

Site Levels

From the topographical survey+ the existing site is roughly a flat level rectangle with the existing ground levels around the barns are in the region of 2.30mODN. **Plan 5**

DRAINAGE AUTHORITIES

Environment Agency

The Environment Agency has permissive powers for reducing the risk of flooding from designated main rivers and from the sea.

The following potential sources of flooding affecting the development site have been identified as:

- From the tidal Boston Haven
- South Forty Foot Drain
- River Witham

The flood zone maps indicate that the area would be flooded without flood defences.). The Flood Map indicates the area at risk of flooding, **assuming no flood defences exist**, for a flood event with a 0.5% chance of occurring in any year for flooding from the sea, or a 1% chance of occurring for fluvial (river) flooding. It also shows the extent of the Extreme Flood Outline which represents the extent of a flood event with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater. In some locations, such as around the fens and the large coastal floodplains there are many kilometres of raised flood defences. To meet the requirements of the National Planning Policy Framework, these defences are removed in their entirety to produce the Flood Map for Planning (Rivers and Sea). The map therefore shows the full extent of areas that would be at risk of flooding if no defences existed and water could spread out across the floodplain.

Flood Zones

These maps show that the site is considered at risk from tidal/fluvial flooding as it is all located within an area zoned as Flood Zone 3a.The maps indicate that the area would be flooded without flood defences, which are in place, (with an annual probability of more than 0.5% i.e., return frequency of less than 1 in 200 years for tidal flooding or more than 1.33% return frequency of less than 1 in 100 years for fluvial flooding). **Map 1**

Risk of Flooding from Rivers & Sea

The Risk of flooding from Rivers and Sea shows that the site for the site is at Low risk. **Low risk** means that each year this area has a chance of flooding of between 0.1% and 1.0%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped or fail. **Map 2**

The Haven Tidal Defences

The Haven is located some 2.1Km east of the site, and the tidal defences protecting this site consist of earth embankments. They are in good condition and reduce the risk of flooding (at the defence) to a 0.67% (1 in 150)

chance of occurring in any year. The Environment Agency inspect these defences routinely to ensure potential defects are identified.

Tidal Flooding (Boston Haven)

The Environment Agency has constructed a tidal flood barrier downstream of the town of Boston, which is due to be fully in in operation in 2020.

The Boston Combined Strategy (BCS) consists of five phases which will provide Boston town with a 1 in 300 (0.33%) annual chance standard of protection against tidal flooding in 100 years. This will be achieved through the provision of the tidal barrier (Phase 3), for which work has commenced and is due for completion by the end of 2020, and improvements over time to the Haven banks to adapt to future sea level risk (Phase 5).

The current breach mapping for Boston is based on the pre-tidal barrier scenario. Following completion of the barrier in late 2020 river levels upstream of it will be restricted to a maximum of 5.30mODN. Updated breach mapping is anticipated to be completed in late 2021.

With the design of the barrier is to prevent a high tide, not greater than 5.30mODN occurring between the barrier and Grand Sluice. This is less than the present-day level of 5.93mODN. Therefore, the risk of tidal flooding, at the site, will be greatly reduced and the effect of tidal flooding at the site is more in keeping with the present-day tidal maps.

The Environment Agency do not currently have any up-to-date Breach modelling for both the fluvial event and the tidal event (following the completion of the barrier) available at this location.

From Lincolnshire & Northamptonshire Area Tidal Modal Analysis, levels for East Coast and Wash: Immingham to the West Lighthouse. The base date for the data is 2017, which should be used in any consideration of future increases due to climate change. **Map 3**

Peak tide levels (2017) for the 1 in 200-year 50% confidence bound tide level is 5.30mODN at Grand Sluice
Peak tide levels (2120) tide level a is 5.30mODN

Taking the precautionary approach, the Hazard Rating following a breach which in Flood Risk Assessment (FD 2320) Guidance for New Development Phase 2 R& D Technical Report these are classified as low <0.75, moderate 0.75-1.25, significant 1.25-2.50 and extreme >2.50 based upon an empirical measure of velocity and depth.

Flood Hazard			Description
	<0.75	Low	**Caution –** Flood Zone with shallow flowing water or deep standing water.
	0.75 – 1.25	Moderate	**Danger for Some -** (i.e. children) Danger Flood Zone with deep or fast flowing water.
	1.25 – 2.0	Significant	**Danger for Most –** Danger Flood Zone with deep fast flowing water.
	>2.0	Extreme	**Danger for All** – Extreme Danger Flood Zone with deep fast flowing water.

HR = d x (v + 0.5) +DF

Where V = Flood flow velocity (m/sec) D = Flood depth (m)

DF = A debris factor included to represent the greater damage, or risk of injury to people, that can occur if debris is swept along with the water. = 0.5 for depths <0.25 or 1.0 for depths

Breach Analysis to Haven Tidal Defences

The Environment Agency has carried out a Tidal Hazard Mapping for the East Coast following a breach to the defences. Following a breach to the defences, the Lincolnshire & Northampton shire Area Tidal Hazard Maps Scenario year 2006, for the 1 in 1000-year event, shows that the site is within a Hazard rating area.

The Environment Agency Tidal Breach Hazard Mapping for the Haven following a breach to the defences, Taking the maps for the 2006 as the tidal breach maps for climate change, for the 1 in 1000-year event, these show that the site is located in a hazard rating area between 0.75 - 1.25 (Danger for Some), depth of flow 0 – 0.5m with velocity 0 – 0.3m/sec. **Map 4**

With the retained level in the Haven being a maximum of 5.30mODN which is some 600mm lower than the breach model and with the surrounding area, within the site around the proposed plots, being subject to a depth of flooding of between 0 – 0.5m deep then a conservative depth of 0.5m is acceptable for the design of the dwelling.

The Environment Agency has not produced maps based on computer modelling of simulated overtopping of defences for the Haven for specific tidal scenarios. But following the provision of the barrier the retained water level is some 700mm below the general flood defence level, therefore overtopping will not occur.

The Boston barrier will afford some protection from tidal risk, but fluvial risk from a breach of the fluvial sources needs to be considered.

River Witham

The River Witham is a fluvial river which could affect the site, from a breach to the flood defences. It lies some 2.4Km north-east of the site.

The River Witham fluvial defences reducing the risk of flooding to this site consist of earth embankments. They are in fair condition and reduce the risk of flooding (at the defence) to a 1% (1 in 100) chance of occurring in any year. These are routinely inspected by the Environment Agency to ensure potential defects are identified.

The risk of flooding at the site is therefore a breach to the right flood embankment to the River Witham This embankment has a crest level around 5.0mODN. Information provided by the Environment Agency gives the following modelled, in-channel, flood levels.CCN-2020-187349.

The various flood levels for the River Witham at the Node Points shown on **Map 5**, are given below.

Fluvial Flood Levels (mODN)

The Fluvial flood levels for the model nodes shown on the attached map are set out below. They are measured in metres above Ordnance Datum

			Annual Exceedance Probability – Maximum Water levels (mODN)										
Node Point	Easting	Northing	1 in 2 50%	1 in 5 20%	1 in 10 10%	1 in 25 4%	1 in 50 2%	1 in 75 1.33%	1 in 100 1%	1 in 100 1%+ 20%CC	1 in 200 0.5%	1 in 1000 0.1%	1 in 1000 0.1% + 20%CC
LWA_00085	532288	344591	3.60	3.81	3.95	4.01	4.03	4.04	4.05	4.35	4.07	4.09	4.36
LWB_00990	531672	345255	3.60	3.81	3.97	4.02	4.04	4.05	4.06	4.35	4.08	4.10	4.36
LWA_01990	531027	346019	3.61	3.85	3.97	4.03	4.04	4.06	4.07	4.35	4.08	4.11	4.36

Source Lower Witham FMI October 2009

Fluvial Flood Flows (m^3/sec)

The Fluvial flood levels for the model nodes shown on the attached map are set out below. They are measured in metres above Ordnance Datum

			Annual Exceedance Probability – Maximum Flows (m^3/sec)										
	Easting	Northing	1 in 2 50%	1 in 5 20%	1 in 10 10%	1 in 25 4%	1 in 5 0 2%	1 in 75 1.33%	1 in 100 1%	1 in 100 1% + 20%CC	1 in 200 0.5%	1 in 1000 0.1%	1 in 1000 0.1% + 20%CC
LWA_00085	532288	344591	133.49	146.79	155.48	158.74	159.53	160.68	160.97	163.78	161.35	164.01	167.62
LWB_00990	531672	345255	130.56	143.77	152.85	156.83	156.76	158.33	158.44	161.07	159.05	162.31	164.54
LWA_01990	531027	346019	127.79	141.12	150.17	154.15	154.32	155.75	156.05	158.36	156.72	158.97	160.94

Source Lower Witham FMI October 2009

Climate Change

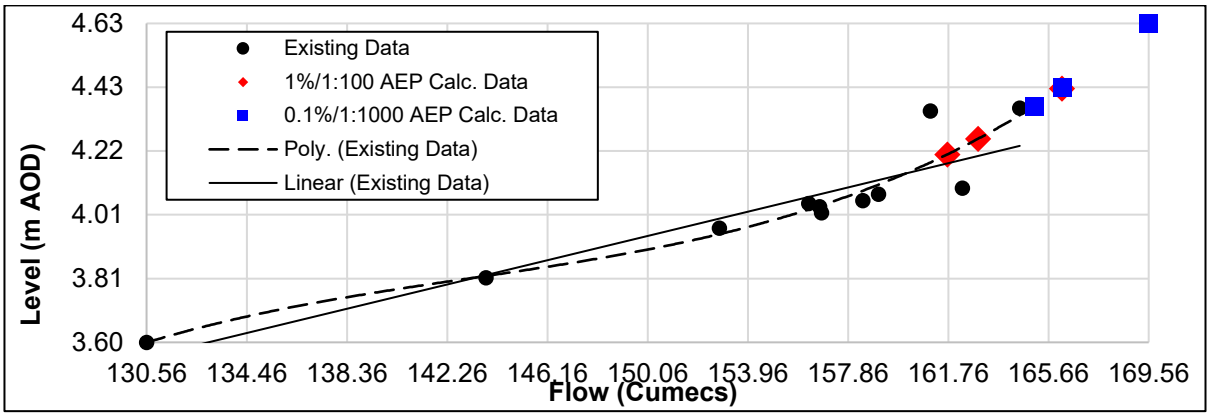
The above results have a climate change increase of 20% added to the peak river flows whereas the guidance now indicates that 35% and 65% (Table 1) should be added for residential developments in Anglian RBD. Given the scale and nature of the proposed development it is considered that additional hydraulic modelling is not appropriate to determine the revised river levels.

Using the Peak River Flows in NPPG Climate change allowances shown in Table 1 (Climate Change Allowances) in the Climate Change Extrapolation and Simple Breach Tool spreadsheet for Node LWA_ 00085 as shown below.

The graph and data show a prediction for the increase in river levels for the 35% and 65% increase in river level.

Adjusted Climate Change Allowances			
Flood AEP	Scenario		
	Central	Higher Central	Upper
1%/1:100	2.07 %	2.83 %	4.89 %
0.1%/1:1000	1.72 %	2.40 %	4.47 %

Adjusted Calculated Levels			
Flood AEP	Climate Change Scenario		
	Central	Higher Central	Upper
1%/1:100	4.21 mAOD	4.26 m AOD	4.42 mAOD
0.1%/1:1000	4.36 mAOD	4.42 m AOD	4.63 mAOD



Reference (number, site name etc.):	Great Fen, Boston
Date:	04/01/2021
Model:	Lower Witham 2009
In-channel node:	LWA_00990

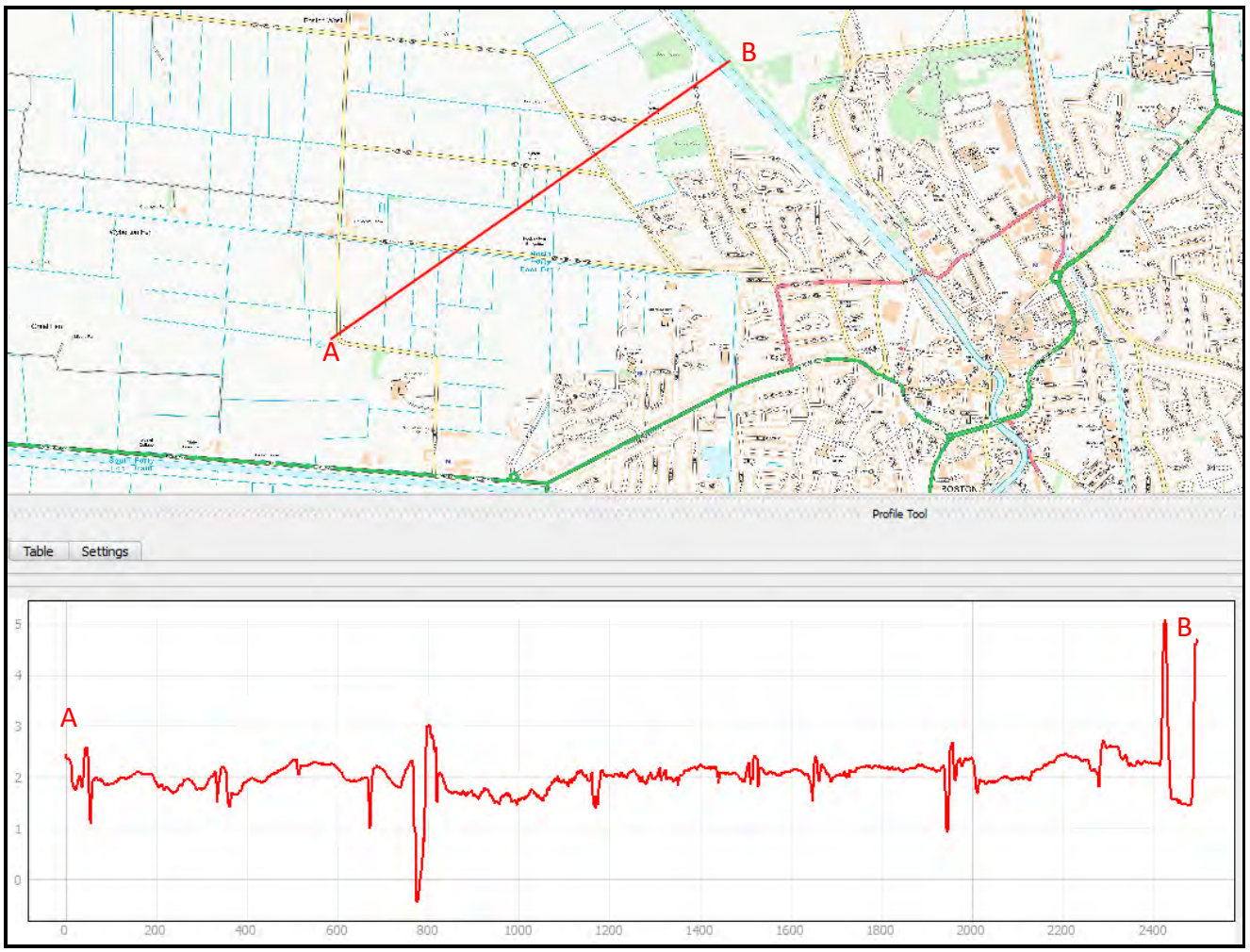
River Basin	Anglian
Time Horizon	Upto 2115
AEP Scenario	1000

STEP 4 EXTRAPOLATED WATER LEVEL OUTPUTS AT NODE LWA_00990		
Central Scenario	4.36	mODN
Higher Central Scenario	4.42	mODN
Upper End Scenario	4.63	mODN

Ground Level information		
At breach	2.42	mODN
General Floodplain Level	2.1	mODN
Highest one used in calculation	2.42	mODN

Defence Type	Fluvial River - Earth Bank	
Breach Width	40	metres
Distance to site	2400	metres

	Central	Higher Central	Upper End	
Depth at site	0.07	0.07	0.08	metres
Velocity at site	0.46	0.46	0.47	m/s
Hazard value at Site	0.57	0.57	0.57	
Hazard rating at Site	Low	Low	Low	
FLOOD LEVEL	**2.49**	**2.49**	**2.50**	**mODN**
FLOOR LEVEL REQUIRED (inc 0.3m freeboard)	**2.79**	**2.79**	**2.80**	**mODN**



Lidar Section across floodplain

South Forty Foot Drain

The South Forty Foot Drain is located some 600m south of the site with the Boston -Sleaford railway line, which has a crest level of 4.00mODN and the A1121 in-between which forms the flood defence to the site.

The South Forty Foot Drain fluvial defences reducing the risk of flooding to this site consist of earth embankments. They are in fair condition and reduce the risk of flooding (at the defence) to a 1% (1 in 100) chance of occurring in any year. These are routinely inspected by the Environment Agency to ensure potential defects are identified.

The various flood levels and flows of the South Forty Foot Drain at the Node Points shown on **Map 5** are given below.

Fluvial Flood Levels (mODN)

The Fluvial flood levels for the model nodes shown on the attached map are set out below. They are measured in metres above Ordnance Datum

			Annual Exceedance Probability – Maximum Water levels (mODN)										
Node Point	Easting	Northing	1 in 2 50%	1 in 5 20%	1 in 10 10%	1 in 20 5%	1 in 50 2%	1 in 75 1.33%	1 in 100 1%	1 in 100 1%+ 20%CC	1 in 200 0.5%	1 in 1000 0.1%	1 in 1000 0.1% + 20%CC
SF104000	528723	343511	2.15	2.51	2.62	2.64	2.67	2.71	2.73	2.75	2.75	2.77	2.78
SF103500	529205	343476	2.15	2.51	2.62	2.64	2.67	2.71	2.73	2.75	2.75	2.77	2.78
SF103000	529706	343441	2.14	2.50	2.62	2.64	2.67	2.71	2.72	2.75	2.75	2.77	2.78
SF 102500	530198	343397	2.14	2.50	2.62	2.64	2.66	2.71	2.72	2.74	2.74	2.77	2.77

Source South Forty Foot Drain 2016

Fluvial Flood Flows (m^3/sec)

The Fluvial flood levels for the model nodes shown on the attached map are set out below. They are measured in metres above Ordnance Datum

			Annual Exceedance Probability – Maximum Flows (m^3/sec)										
Node Point	Easting	Northing	1 in 2 50%	1 in 5 20%	1 in 10 10%	1 in 20 5%	1 in 50 2%	1 in 75 1.33%	1 in 100 1%	1 in 100 1% + 20%CC	1 in 200 0.5%	1 in 1000 0.1%	1 in 1000 0.1% + 20%CC
SE102500	528723	343511	28.23	50.36	54.05	54.04	56.17	56.37	56.27	56.43	56.64	57.35	57.34
SF103000	529205	343476	28.67	51.87	55.44	55.23	57.51	57.80	57.75	57.90	58.17	58.89	58.88
SE103500	529706	343441	29.19	53.50	56.89	56.53	58.99	59.34	59.34	59.43	59.76	60.46	60.56
SF 102500	530198	343397	29.84	55.21	58.39	57.90	60.49	60.90	60.92	60.97	61.38	62.08	62.25

Source South Forty Foot Drain 2016

Climate Change

The above results have a climate change increase of 20% added to the peak river flows whereas the guidance now indicates that 35% and 65% (Table 1) should be added for residential developments in Anglian RBD.

Given the scale and nature of the proposed development it is considered that additional hydraulic modelling is not

appropriate to determine the revised river levels. Therefore, a linear interpolation of the South Forty Foot Drain flood levels has been used for Node SF104000, which gives the following.

1% (1:1000)

Increase in flow for 20% climate change (2.78 – 2.77)	0.01m
Increase in level for 1% increase in climate change	0.0005m
Increase in level for 65% climate change	0.03m
Increase in level for 35% climate change	0.018m

This gives the following revised flood levels.

Scenario	Level (m AOD)
Upper End	2.81
Higher Central	2.79

1% (1:1000) Revised Peak Flood Levels

With the predicted depth of flooding from the tidal source and from a breach to the River Witham being 500mm deep at the site flooding from this fluvial source will be less and therefore has been discounted as the depth of flooding from this source will be less.

Floor levels

The minimum mitigation measures required for developments that do not have ground floor sleeping shall be determined by the flood depths arising from the 2115 0.5% breach scenario. The finished floor Level FFL of any new dwellings shall be informed by the flood depths. For flood depths between 0m - 0.5m deep the FFL shall be set at a minimum of 500mm above the ground level.

It is proposed that the minimum ground floor level for the habitable accommodation for the proposed dwelling be raised 500m above the existing ground level (2.30mODN) set at a level of 2.80mODN.

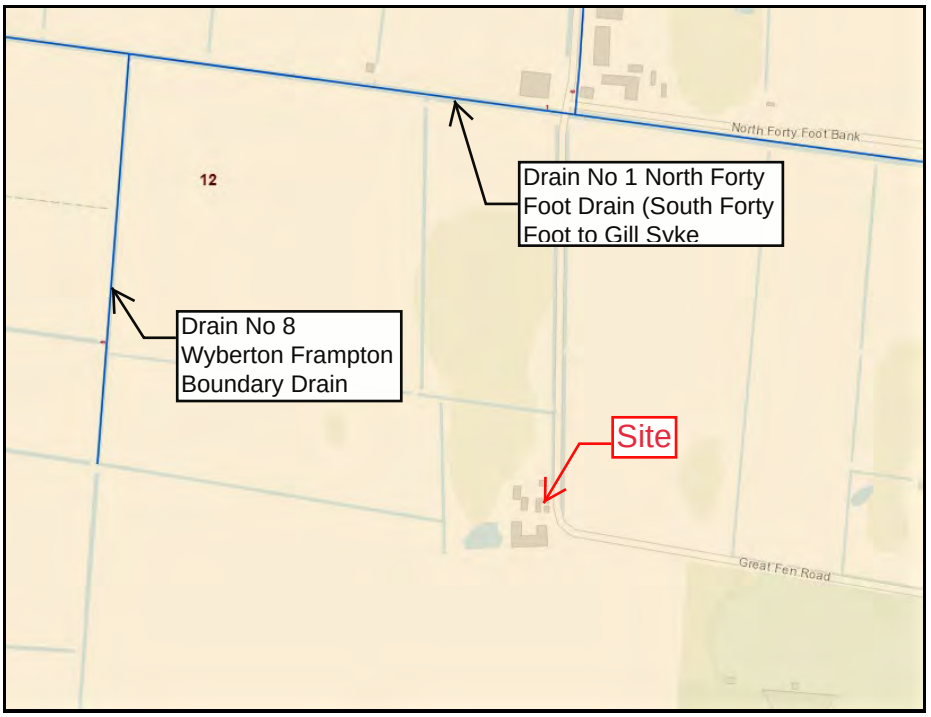
Modelled Flood Events

The Modelled flood Events Maps (with defences) for both the River Witham and for the South Forty Foot Drain demonstrates that the site is not affected by any event from both flood sources. **Map 6 & Map 7**

Black Sluice Internal Drainage Board

The proposed development site is located within the catchment area No 12 Boston West, of Black Sluice Internal Drainage Board.

The Board are therefore responsible to operate and maintain the arterial fluvial system. There are no Board's maintained drains close to the site. The nearest ones are located some 550m north of the site Drain No 1 North Forty Foot (South Forty Foot to Gill Syke) and Drain No 8 Wyberton Frampton Boundary drain located some 500m west of the site.



Extract from Black Sluice IDB Drainage Map

FLOODING FROM OTHER SOURCES

Flooding is a natural process and can happen at any time from sources other than watercourses and the sea.

- Flooding from land can occur from intense rainfall, often over short duration of time that is unable to soak into the ground or enter the drainage system. However, with the natural topographic nature of the ground being flat, with no high ground around the site this will not cause any rapid inundation of the site and is likely only lead to local ponding of shallow depth and low velocity. The ground floor level for the development is to be raised 500mm above the existing ground level. It is concluded that flooding from this source is limited to minor isolated cases and is not of strategic significance as regards to flood risk.

- The area is not known to suffer from any groundwater problems.

- Flooding from sewers can occur from overloading from heavy rainfall caused by blockages or having inadequate capacity. However, due to the site location there are no public sewers close by.

- Non-natural or artificial sources of flooding such as reservoirs, lakes, or canals where water is stored above natural ground level could cause flooding if the structure fails or is over topped. There are no known sources within the vicinity of the site.

RESIDUAL RISKS

There is always a possibility of a flood more than that allowed for which might conceivably cause some flooding

to the properties. However, such an event would have a very low probability and the risk of flooding to the property would be extremely small. It is therefore considered that the residual risks associated with flooding are not significant.

SURFACE WATER FLOODING

The proposed development site is shown on the Low-Risk scenario Surface Water flood maps, for the 1 in 1000-year event, not to be affected from surface water flooding. **Map 8**

The maps for surface water and revised maps for river and sea flooding define the risk as High, Medium, Low and Very Low. The chance of flooding for the area defined in any given year is shown below:

- **High:** greater than 1 in 30 (3.3%).
- **Medium:** between 1 in 100 (1%) and 1 in 30 (3.3%).
- **Low:** between 1 in 1000 (0.1%) and 1 in 100 (1%).
- **Very Low:** less than 1 in 1000 (0.1%)
-

Unlike the fluvial mapping, which is based on a detailed hydraulic model, this mapping is based purely on applying rainfall to a digital terrain model. As such this mapping serves to represent a worst-case scenario which may well overstate the actual probability of flooding in this area with low depressions shown to be affected.

There is a caveat on the Defra Data website, as to the use of these maps and that they are not to be used to identify that an individual property will flood. Because of the way they have been produced and the fact that they are indicative, these maps are not appropriate to act as the sole evidence for any specific planning or regulatory decision or assessment of risk in relation to flooding at any scale without further supporting studies or evidence. The Environment Agency and the Lead Local Flood Authority (custodians of the surface water flood risk dataset) have subsequently confirmed that the published high-level data should not be used on a site-specific basis and that mapping is only suitable for National to County Scale use.

SEQUENTIAL APPROACH

When applying the sequential approach for flood risk in accordance NPPF the site of the development would fall into Flood Zone 3 (High Probability) as the site is shown not to be within the fluvial flood plain as shown on the Environment Agency's Flood Map without defences in place.

The Environment Agency categorise land into one of three Flood Zones.

- Flood Zone 1 is land outside the 0.1% floodplain (with a chance of flooding of less than 0.1% chance in any given year)
- Flood Zone 2 is land that falls between the 1 in 100-year extent and the 1 in 1000-year extent (a chance of flooding between 1% and 0.1% in any given year)
- Flood Zone 3a is land which falls within the 1 in 100-year flood extent (has a 1% chance of a flood

occurring in any given year).

Applying the Flood Risk Vulnerability Classification in Table 2 of NPPG, the proposed development for residential use is classified as, “More Vulnerable” with Table 1 of NPPG stating that such uses are appropriate in this zone (as summarised in Table 3 NPPG).

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

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Flood Zone 1	✓	✓	✓	✓	✓
	Flood Zone 2	✓	✓	Exception Test Required	✓	✓
	Flood Zone 3a	Exception Test Required	✓	✗	Exception Test Required	✓
	Flood Zone 3b Functional Floodplain	Exception Test Required	✓	✗	✗	✗

Sequential Test and Exceptions Test

NPPF Guidance Paragraphs 155 - 165 requires development within high areas of flood risk be determined using a sequential risk-based approach to the location of development to avoid where possible flood risk to people and property and manage any residual risk, taking account the impacts of climate change.

The aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. The NPPF states that development should not be permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding. It is important to note that the Sequential Test does not specifically mean that sites such as this cannot be developed, rather that sites at less risk should be developed first.

Within Flood Zone 3, generally “More Vulnerable” developments such as residential are discouraged, however, due to this being a change of use to an existing building, the Sequential Test and Exception Test are not applicable as moving the existing buildings is not an option. As set out in the National Planning Policy Framework Technical Guidance (para.164), change of use should not be subject to the sequential and exception tests but will still need to meet the requirements of a site-specific flood risk assessment.

CLIMATE CHANGE

Global warming is now recognised that it is likely to affect the frequency and severity of extreme events as both tidal and fluvial flooding. The Climate change allowances in the NPPF Guidance was updated on the 17th December 2019.

The site is located within the Anglian River Basin, for sites within Flood Zone 3a and for “More Vulnerable” land uses the Higher Central and Upper End river flow allowances figures in Table 1 should be used.

Table 1 Peak River Flow Allowances

Table 1 Peak river flow allowances by river basin district (1961 to 1990 baseline)				
River basin District	Allowance category	Total potential change anticipated for ‘2020s’ (2015 to2039)	Total potential change anticipated for ‘2050s’ (2040 to2069)	Total potential change anticipated for ‘2080s’ (2070 to2115)
Anglian	Upper End	25%	35%	65%
	Higher central	15%	20%	35%
	Central	10%	15%	25%

The effect of global warming on peak rainfall allowances is given in Table 2.

Table 2 Peak Rainfall Intensity

Table 2 Peak rainfall intensity allowance in small and urban catchments (1961 to1990 baseline)			
Applies across all of England	Total potential change anticipated for 2010 to 2039	Total potential change anticipated for 2040 to 2059	Total potential change anticipated for 2060 to 2115
Upper End	10%	20%	40%
Central	5%	10%	20%

The annual sea rise due to climate change is given in NPPF and the recommended contingency allowances are stated in Table 3.

Table 3 Peak Sea Level Rise

Table 3 Peak sea level allowance for each epoch in (mm) per year with cumulative sea level rise for each epoch in brackets (use 1981to 2000 baseline)						
Area of England) (Use River Basin	Allowance	2000 to 2035	2036 to 2065	2066 to 2095	2096 to 2125	Cumulative Rise 2000 to 2125 (m)
Anglian	Higher Central	5.8 (203mm)	8.7 (261mm)	11.6 (348mm)	13 (390mm)	1.20m
Anglian	Upper End	7 (245mm)	11.3 (339mm)	15.8 (474mm)	18.1 (543mm)	1.6m

DRAINAGE STATMENT

Surface Water Drainage

Applications for developments where the proposals will result in the increase the amount of surface water run-off require that an appropriate drainage strategy to be undertaken to ensure that the surface water discharge mimics the existing pre-development regime.

Construction on any undeveloped area has the potential to increase the rates and volumes of surface water runoff, due to the replacement of pervious land with impervious surfaces. In this case, the areal footprint of the

building, access tracks and other infrastructure is unchanged. As there are no proposals to increase the footprint of the buildings, post development, the roof water from the buildings will continue to discharge to the existing outlets which have functioned over many years without giving any cause for complaint. These will be checked and cleaned out and renewed, as necessary.

All access roads and parking areas are already available.

Watercourses & Public Sewers

There are no proposals to discharge any surface water to a watercourse or a public sewer.

Foul Water Drainage

As there are no public sewers in the vicinity of the site foul drainage from the property will be collected in underground pipes designed in accordance with Building Regulations. Document H and connected into a package treatment unit.

As there is a positive drainage system capable of receiving flows from the development there is no likely impact on neighbouring property.

FLOOD RESILIENCE CONSTRUCTION

Any impact of damage to the properties can be foreseen and mitigated against by relatively simple design and construction techniques. There are two forms of flood protection works: -

- **Flood-resistance or proofing works**- these try to reduce the amount of water entering a building.
- **Flood-resilient works**: - these reduce the amount of damage caused by water entering the building.

The proposed development will have the following resilient measures incorporated in the construction in accordance with “Improving the flood performance of new buildings” CLG (2007).

- The ground floor living accommodation for the proposed dwelling is to be raised 500mm above the existing average ground level, set at 2.80mODN.

- Water, electricity, and gas meters: should be located above the predicted flood level. Electrical services: electrical sockets, heating systems: boiler units and ancillary devices should be installed at least 500mm above the ground floor level to minimise damage to electrical services Electric ring mains should be installed at first floor level with drops to ground floor sockets and switches.

- The ground floor to be constructed with a solid concrete floor with no voids beneath and no low-

level wall vents. However, if a beam type floor is to be used, provision should be incorporated for draining the under-floor voids. The wall vents are to be fitted with 'Flood Angel' air bricks which allow air to free pass through as a usual, (complying with BS493:1995) but under flood conditions it shuts down when in contact with water. A removable mesh prevents the passage of debris which may otherwise impinge on the moving part.

- Avoid the use of absorbent cavity insulation to the ground floor level and use the closed cell type.

- Where possible, all service entries should be sealed (e.g., with expanding foam or similar closed cell material). Closed cell insulation should be used for pipes which are below the predicted flood level.

- As this site is in an area that is capable of receiving flood warnings from the Environment Agency Floodline Warning Direct system. It is recommended that the property Owner contact the Environment Agency's Floodline on 0845 988 1188 to register the property to receive advance warning of flooding by telephone, mobile, fax, SMS text, email or pager. The Environment Agency aim to issue a 'severe flood warning' approximately 2 hours before existing defences are overtopped.

CONCLUSION

- The site does have the protection of flood defences which are well maintained by the Environment Agency.

- The site for the proposed dwelling is shown to be within Flood Zone 3 'High Probability' as detailed on the Environment Agency's Flood Zone Maps without defences.

- The Lincolnshire & Northamptonshire Area Tidal Hazard Maps Scenario years 2006, & 2115 for the 1 in 200-year event, shows that the site is affected by flooding following a breach to the flood defences. Taking the maps for the 2006 as the tidal breach maps for climate change, for the 1 in 1000-year event, these show that the site is located in a hazard rating area between 0.75 - 1.25 (Danger for Some), depth of flow 0 – 0.5m with velocity 0 – 0.3m/sec. With the retained level in the Haven being a maximum of 5.30mODN which is some 600mm lower than the breach model and with the surrounding area, within the site around the proposed plots, being subject to a depth of flooding of between 0.25 – 0.5m deep then a conservative depth of 500mm is acceptable for the design of the dwellings.

- The predicted tidal flooding following a breach, with climate change, depth at the site is 500mm, flooding from a breach to the defences for the fluvial source, namely, the River Witham is predicted to be 2.78mODN (with 300mm freeboard)

- The ground floor living accommodation for the proposed dwellings is to be raised 500mm above the

existing average ground level, set at 2.80mODN which is above both the predicted climate change flood level for the tidal and fluvial source.

- The Flood Risk Vulnerability Classification in Table 2 of NPPG the proposed residential development is classified as “More Vulnerable”, with Table 1 of NPPG stating that such uses are appropriate in this zone subject to the Exception Test.

- As set out in the National Planning Policy Framework Technical Guidance (para.164), change of use should not be subject to the sequential and exception tests but will still need to meet the requirements of a site-specific flood risk assessment.

- Any impact of damage to the property can be foreseen and mitigated against by relatively simple design and construction techniques. They will be constructed using materials which are flood resilient construction as outlined in the report.

- Flooding from other sources is unlikely to affect the site.

- No obvious constraints have been identified that may impact the proposed development and the type of mitigation measures that can be used to reduce the flood risk, there is no increase in the flood risk to others.

Flood map for planning

Your reference	Location (easting/northing)	Created
Rectory Farm	**529371/344187**	**11 Dec 2020 14:23**

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn’t include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

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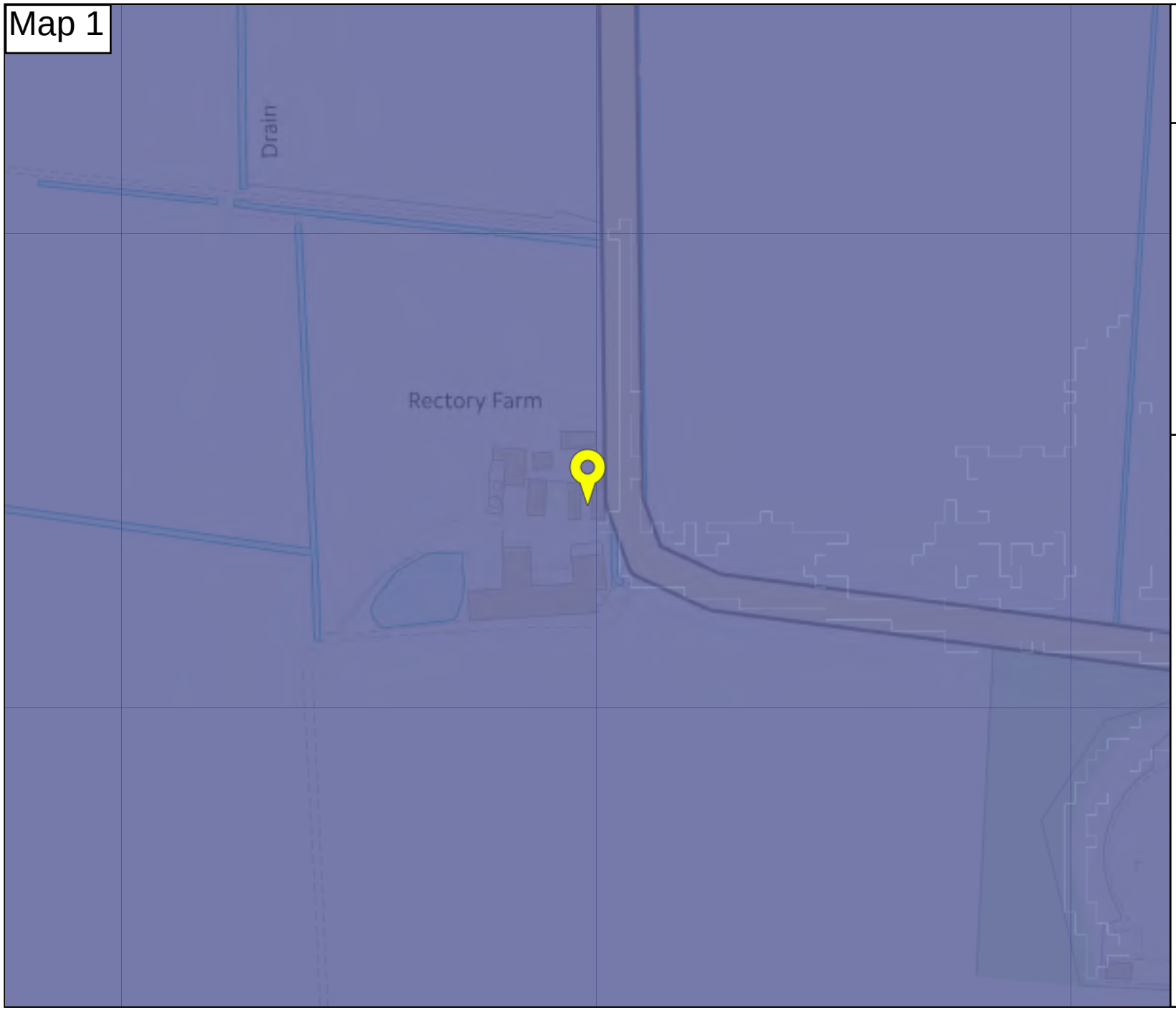

Environment Agency

Flood map for planning

Your reference
Rectory Farm

Location (easting/northing)
529371/344187

Scale
1:2500

Created
11 Dec 2020 14:23

- Selected point
- Flood zone 3
- Flood zone 3: areas bene tting from ood defences
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Flood storage area

0 20 40 60m

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Flood risk

Extent of flooding

Location

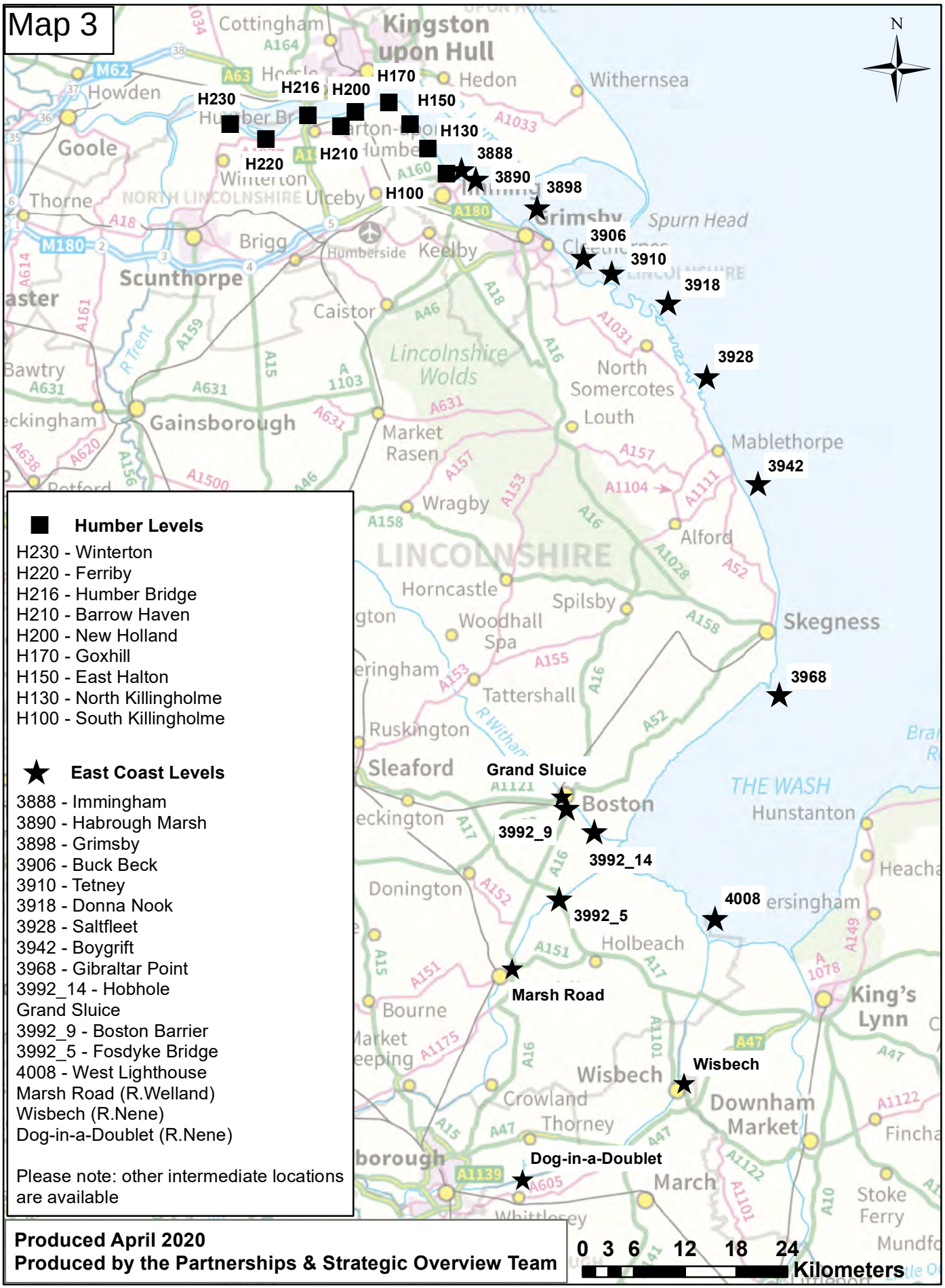
Rectory Farm

Extent of flooding from rivers or the sea

High Medium Low Very low

Tidal Level Location Map
Lincolnshire & Northamptonshire Area

Environment Agency



Produced April 2020
Produced by the Partnerships & Strategic Overview Team

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Humber Estuary

2014 Interim Water Level Profile

Ref	Location	Easting	Northing	Annual Chance (1 in x) of Tide Level metres ODN																				
				1			10			50			100			200			300			1000		
				Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound		
				5%	50%	95%	5%	50%	95%	5%	50%	95%	5%	50%	95%	5%	50%	95%	5%	50%	95%	5%	50%	95%
H230	**Winterton**	493420	422830	5.13	5.14	5.15	5.47	5.51	5.56	5.67	5.74	5.82	5.74	5.83	5.92	5.81	5.90	6.00	5.84	5.94	6.03	5.94	6.02	6.06
H220	**Ferriby**	497550	421150	5.03	5.04	5.05	5.38	5.42	5.47	5.59	5.67	5.77	5.67	5.77	5.89	5.74	5.86	6.00	5.78	5.91	6.06	5.91	6.04	6.19
H216	**Humber Bridge**	502478	423914	4.97	4.98	4.99	5.33	5.37	5.42	5.55	5.64	5.74	5.64	5.75	5.88	5.72	5.86	6.02	5.75	5.92	6.10	5.88	6.09	6.31
H210	**Barrow Haven**	506380	422620	4.91	4.92	4.93	5.27	5.31	5.36	5.50	5.60	5.72	5.60	5.73	5.89	5.69	5.86	6.08	5.74	5.94	6.18	5.87	6.17	6.51
H200	**New Holland**	508020	424330	4.86	4.87	4.88	5.21	5.26	5.31	5.45	5.55	5.67	5.55	5.68	5.84	5.64	5.81	6.03	5.68	5.89	6.13	5.82	6.12	6.47
H170	**Goxhill**	511970	425440	4.66	4.67	4.68	5.00	5.04	5.09	5.24	5.34	5.46	5.33	5.47	5.65	5.43	5.61	5.85	5.47	5.69	5.96	5.62	5.95	6.37
H150	**East Halton**	514450	422870	4.58	4.59	4.60	4.91	4.96	5.01	5.15	5.25	5.38	5.25	5.39	5.57	5.34	5.53	5.77	5.39	5.62	5.90	5.54	5.89	6.33
H130	**North Killingholme**	516530	420000	4.50	4.51	4.52	4.82	4.87	4.92	5.05	5.15	5.28	5.15	5.28	5.46	5.24	5.42	5.66	5.29	5.51	5.78	5.43	5.77	6.19
H100	**South Killingholme**	518700	417120	4.41	4.41	4.42	4.72	4.77	4.82	4.95	5.05	5.17	5.05	5.18	5.35	5.14	5.32	5.55	5.18	5.40	5.67	5.33	5.66	6.08
3888	**Immingham***	520440	417625	4.16	4.17	4.19	4.50	4.53	4.62	4.73	4.80	5.00	4.83	4.93	5.19	4.93	5.06	5.41	4.98	5.14	5.55	5.15	5.38	6.01

NOTE:

- The base date for the data is 2014.
- The levels are still water levels. Depending on the use of the data it may be necessary to consider wave heights and / or joint probability analysis of water level and other variables.
- Levels for other annual chance probabilities are available if required.
- The information is due to be updated in mid-2020
- *The levels for Immingham are taken from the 2018 Coastal Flood Boundary dataset.

Customer services line: 03708 506 506
Calls to 03 numbers cost the same as calls to standard geographic numbers
(i.e. numbers beginning with 01 or 02)

Email: enquiries@environment-agency.gov.uk
www.gov.uk/environment-agency

East Coast and Wash: Immingham to the West Lighthouse

2018 Coastal Flood Boundary Extreme Sea Levels

CFB Ref	Location	Easting	Northing	Annual Chance (1 in x) of Tide Level in metres ODN																				
				1			10			50			100			200			300			1000		
				Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound		
				2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%	97.5%
3888	Immingham	520440	417625	4.16	4.17	4.19	4.50	4.53	4.62	4.73	4.80	5.00	4.83	4.93	5.19	4.93	5.06	5.41	4.98	5.14	5.55	5.15	5.38	6.01
3890	Haborough Marsh	522100	416512	4.14	4.15	4.17	4.48	4.51	4.60	4.70	4.77	4.97	4.80	4.90	5.16	4.90	5.03	5.38	4.94	5.10	5.51	5.11	5.34	5.97
3898	Grimsby	529295	413162	3.98	3.99	4.01	4.31	4.34	4.43	4.53	4.60	4.80	4.61	4.71	4.97	4.71	4.84	5.19	4.74	4.90	5.31	4.88	5.11	5.74
3906	Buck Beck	534709	407369	3.87	3.88	3.90	4.19	4.23	4.31	4.41	4.50	4.68	4.50	4.61	4.86	4.61	4.75	5.10	4.64	4.82	5.22	4.80	5.05	5.66
3910	Tetney	538035	405537	3.85	3.86	3.89	4.17	4.22	4.30	4.40	4.50	4.67	4.49	4.61	4.86	4.60	4.75	5.10	4.63	4.82	5.21	4.80	5.06	5.66
3918	Donna Nook	544641	401997	3.82	3.83	3.86	4.14	4.19	4.27	4.38	4.48	4.65	4.47	4.60	4.85	4.58	4.74	5.10	4.63	4.82	5.22	4.81	5.08	5.68
3928	Saltfleet	549131	393360	3.78	3.79	3.82	4.11	4.16	4.26	4.36	4.46	4.64	4.47	4.59	4.86	4.57	4.74	5.11	4.63	4.83	5.25	4.83	5.11	5.74
3942	Boygrift	555131	380860	3.72	3.74	3.77	4.06	4.11	4.22	4.33	4.43	4.65	4.43	4.57	4.87	4.56	4.73	5.13	4.62	4.83	5.28	4.85	5.15	5.82
3968	Gibraltar Point	557652	356181	4.16	4.17	4.20	4.51	4.56	4.67	4.76	4.85	5.08	4.85	4.97	5.27	4.94	5.10	5.49	4.99	5.18	5.63	5.14	5.41	6.09
3992_14	Hobhole	535990	340116	4.96	4.97	5.01	5.40	5.44	5.56	5.66	5.76	5.98	5.78	5.90	6.20	5.88	6.04	6.44	5.92	6.11	6.57	6.03	6.31	6.99
	Grand Sluice*	532366	344510	4.93	4.94	4.98	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
3992_9	Boston Barrier	532754	342852	4.93	4.94	4.98	5.41	5.45	5.57	5.73	5.83	6.05	5.85	5.97	6.27	5.93	6.09	6.49	5.94	6.13	6.59	5.98	6.26	6.94
3992_5	Fosdyke Bridge	531886	332234	4.87	4.88	4.92	5.31	5.35	5.47	5.58	5.68	5.90	5.71	5.83	6.13	5.82	5.98	6.38	5.87	6.06	6.52	6.01	6.29	6.97
4008	West Lighthouse	550094	329971	4.87	4.88	4.91	5.21	5.26	5.37	5.46	5.56	5.78	5.56	5.68	5.98	5.66	5.82	6.21	5.71	5.90	6.35	5.86	6.14	6.81
-	Marsh Road	525988	324065	-	5.04	-	-	5.44	-	-	5.73	-	-	5.85	-	-	5.98	-	-	-	-	-	-	-
-	Wisbech	546110	309940	-	4.83	-	-	5.25	-	-	5.53	-	-	5.66	-	-	5.78	-	-	-	-	-	-	-
-	Dog-in-a-Doublet	527200	299287	-	3.67	-	-	4.00	-	-	4.22	-	-	4.32	-	-	4.42	-	-	-	-	-	-	-

See next page for notes

East Coast and Wash: Immingham to the West Lighthouse

2018 Coastal Flood Boundary Extreme Sea Levels

NOTES:

The following notes apply to all CFB sites (ie all on table excluding Marsh Road, Wisbech, Dog-in-a-Doublet)

- The base date for the data is 2017.
- The levels are still water levels. Depending on the use of the data it may be necessary to consider wave heights and / or joint probability analysis of water level and other variables.
- Levels for other annual chance probabilities are available if required.
- For additional information relating to the 2018 Coastal Flood Boundary Extreme Sea Levels or to access the full dataset for the above sites or intermediate locations refer to the Defra Metadata Catalogue at https://deframetadata.com/geonetwork/srv/eng/catalog.search#/metadata/84a5c7c0-d465-11e4-b0bd-f0def148f590

The following notes apply to all Marsh Road, Wisbech, Dog-in-a-Doublet

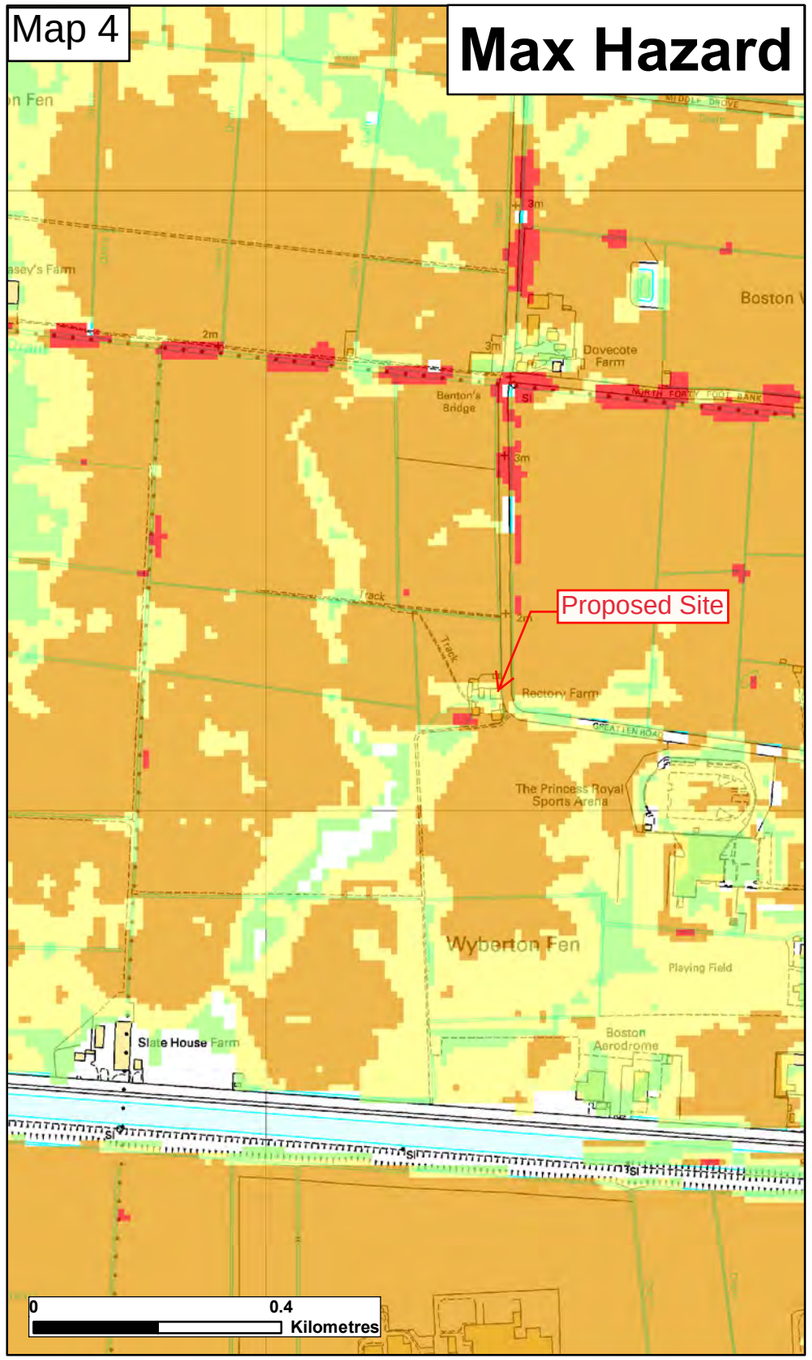
- The base date for the data is 2006
- The levels are still water levels. Depending on the use of the data it may be necessary to consider wave heights and / or joint probability analysis of water level and other variables.
- Levels for other annual chance probabilities are available if required.
- These levels will be updated as their respective tidal river models are updated.

The following notes apply to Grand Sluice

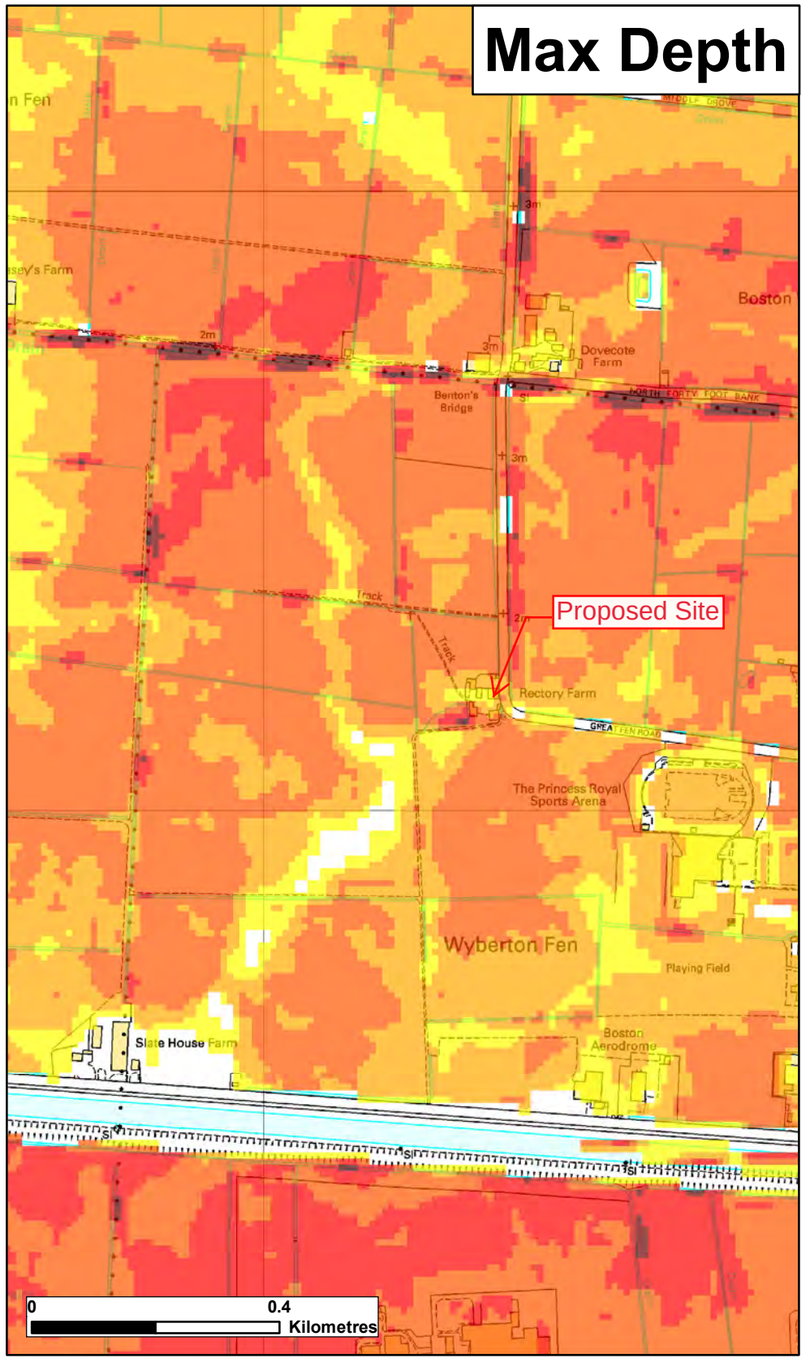
- The data is based on CFB 2018 data for Boston Barrier site, capped at 5.3mAOD to reflect use of the barrier.
- The base date for the data is 2017
- The levels are still water levels. Depending on the use of the data it may be necessary to consider wave heights and / or joint probability analysis of water level and other variables.
- For additional information relating to the 2018 Coastal Flood Boundary Extreme Sea Levels or to access the full dataset for the above sites or intermediate locations refer to the Defra Metadata Catalogue at https://deframetadata.com/geonetwork/srv/eng/catalog.search#/metadata/84a5c7c0-d465-11e4-b0bd-f0def148f590

Map 4

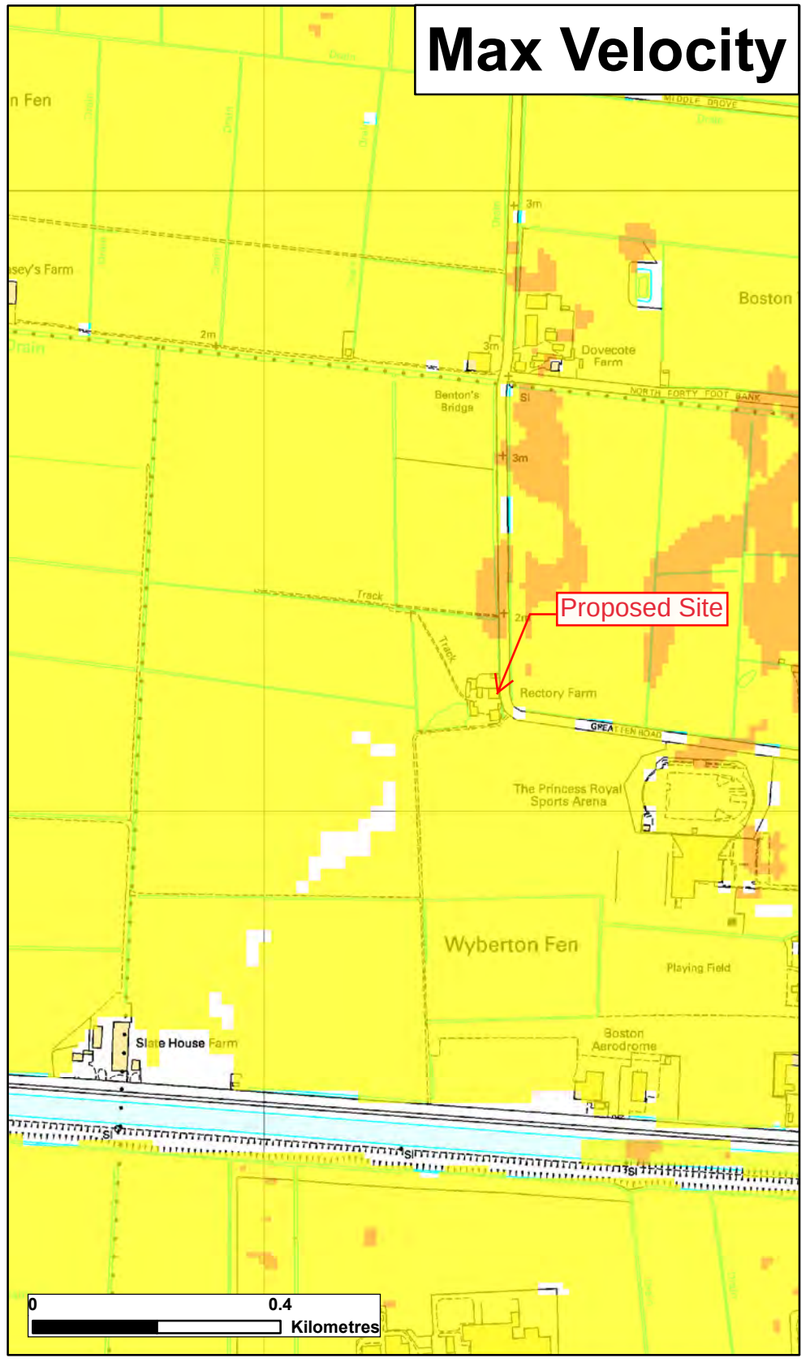
Max Hazard



Max Depth



Max Velocity



★ **Modelled Breach Locations** - see also the accompanying plan "Location of Modelled Breaches"

Max Hazard
(Flood Risk to People : FD2320)

- Less than 0.75 (Low Hazard)
- Between 0.75 and 1.25 (Danger for Some)
- Between 1.25 and 2.0 (Danger for Most)
- Greater than 2.0 (Danger for All)

Max Depth (m)

- 0 - 0.25
- 0.25 - 0.50
- 0.50 - 1.0
- 1.0 - 1.6
- 1.6 +

Max Velocity (m/s)

- 0 - 0.3
- 0.3 - 1.0
- 1.0 - 1.5
- 1.5 - 2.5
- 2.5 +

Date Printed	October 2020	Scenario year	2006	Scenario Annual Chance	0.1% (1 in 1000)	CCN Number	CCN-2020-187349

This map shows the level of flood hazard to people (called a hazard rating) if our flood defences are breached at certain locations, for a range of scenarios. The hazard rating depends on the depth and velocity of floodwater, and maximum values of these are also mapped.

The map is based on computer modelling of simulated breaches at specific locations. Each breach has been modelled individually and the results combined to create this map. Multiple breaches, other combinations of breaches, different sized tidal surges or flood flows may all give different results.

The map only considers the consequences of a breach, it does not make any assumption about the likelihood of a breach occurring. The likelihood of a breach occurring will depend on a number of different factors, including the construction and condition of the defences in the area. A breach is less likely where defences are of a good standard, but a risk of breaching remains.

General Enquiries No: 03708 506 506. Weekday Daytime calls cost 5p plus up to 6p per minute from BT Weekend Unlimited. Mobile and other providers' charges may vary

Environment Agency

Lincolnshire and Northamptonshire Hazard mapping

Map Centred on TF 29225 44210

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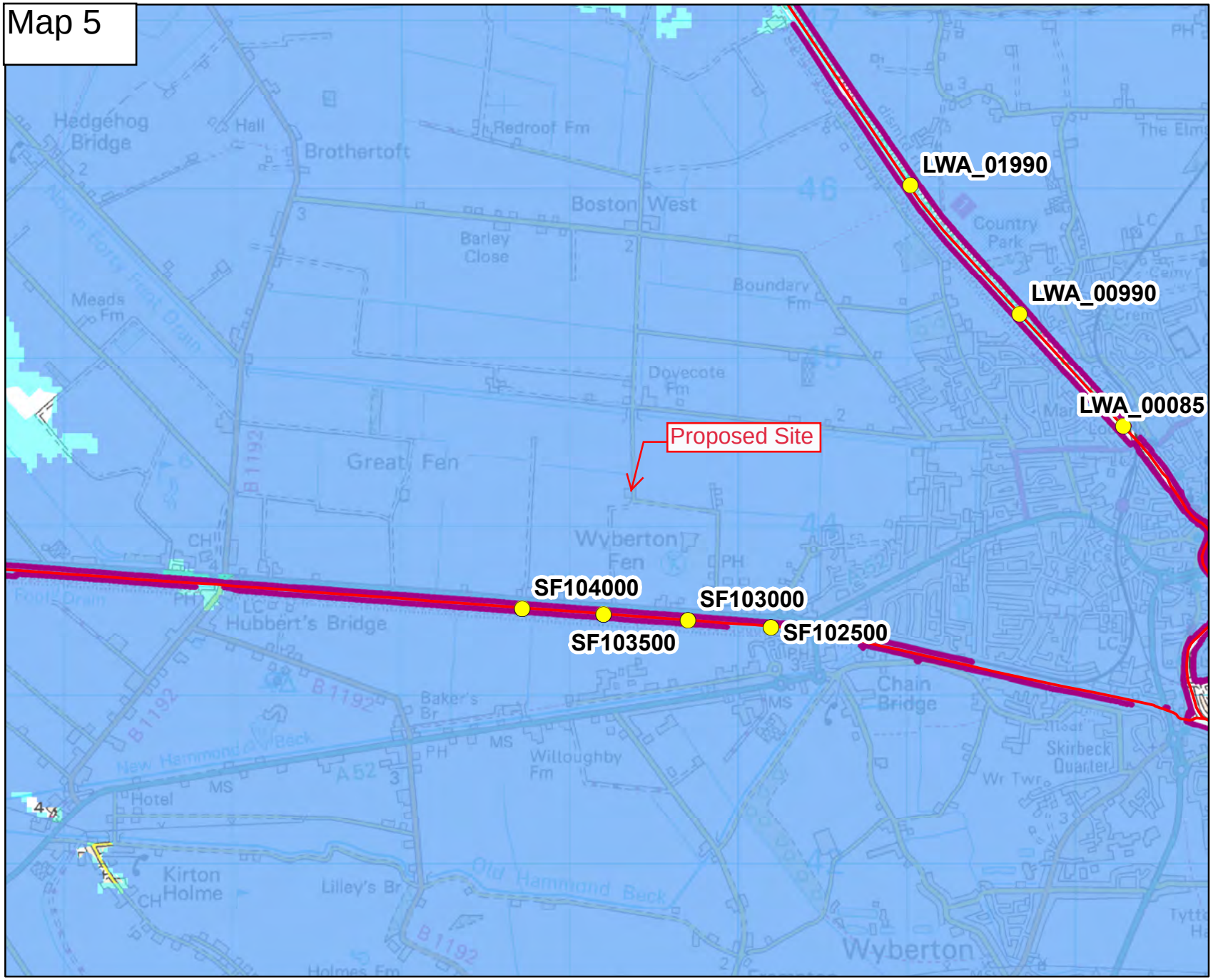
Flood Map centred on TF 29225 44210 - created October 2020 [Ref: CCN-2020-187349]

Map 5



Environment Agency

Scale 1:32,000

N W E S

Legend

- Modelled Nodes
- Main River
- Raised Defences
- Areas at Risk of Flooding from Rivers or the Sea
- Extreme Flood Outline

Dark blue shows the area that could be affected by flooding, either from rivers or the sea, if there were no flood defences. This area could be flooded:

- from the sea by a flood that has a 0.5% (1 in 200) or greater chance of happening each year.

- or from a river by a flood that has a 1% (1 in 100) or greater chance of happening each year.

Light blue shows the extent of the Extreme Flood Outline, which represents the extent of a flood event with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater.

These two colours show the extent of the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements. Sites outside the two extents, but behind raised defences, may be affected by flooding if the defences are overtopped or fail.

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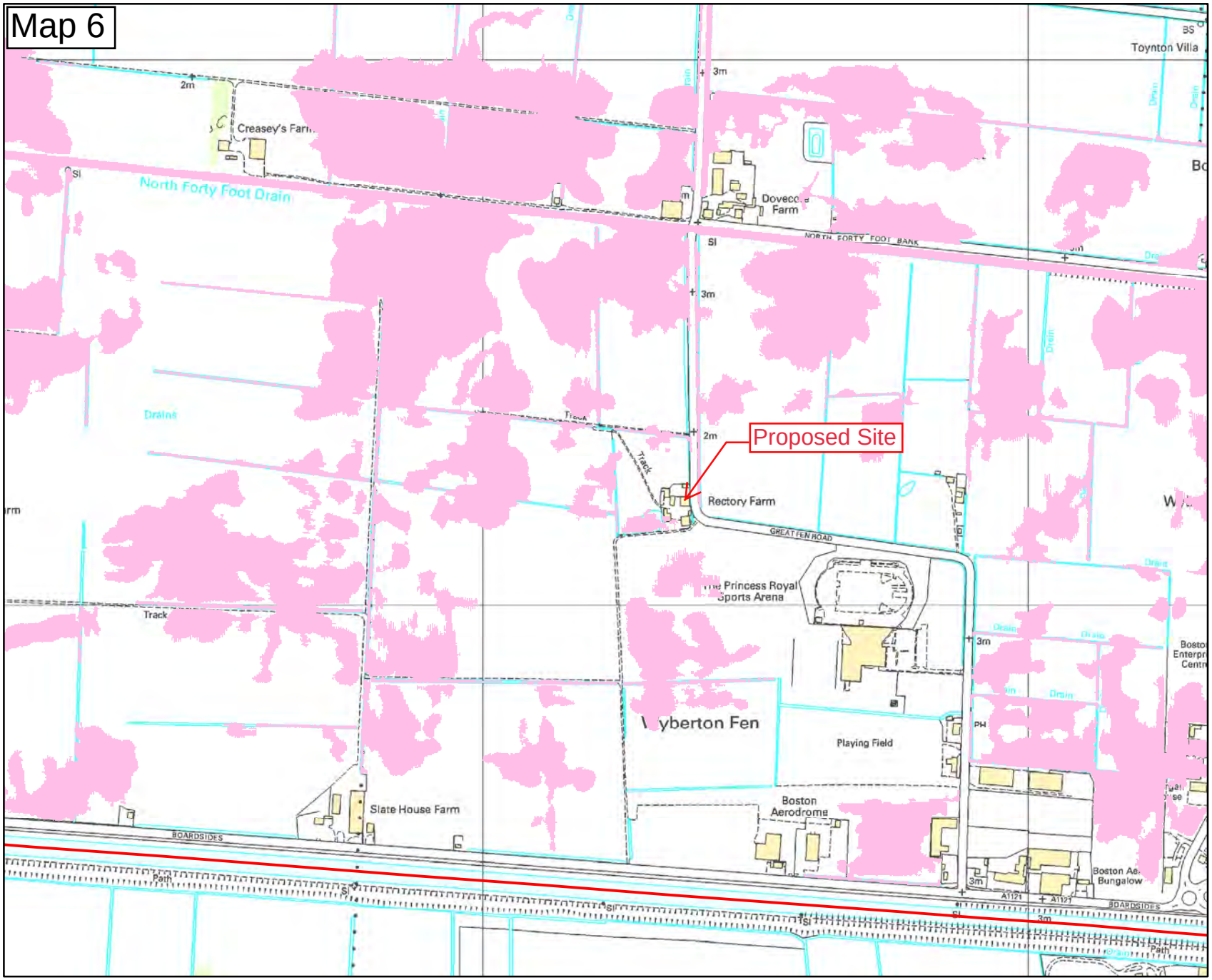
Modelled Flood Extents (with defences) Model: Lower Witham Date: 2009



Environment Agency

Scale 1:9,900

N W E S

Legend

- Main River
- 5% (1 in 20) Fluvial Event
- 1% (1 in 100) Fluvial Event
- 1% (1 in 100) Fluvial Event inc Cimate Change
- 0.1% (1 in 1000) Fluvial Event
- 0.1% (1 in 1000) Fluvial Event inc Cimate Change

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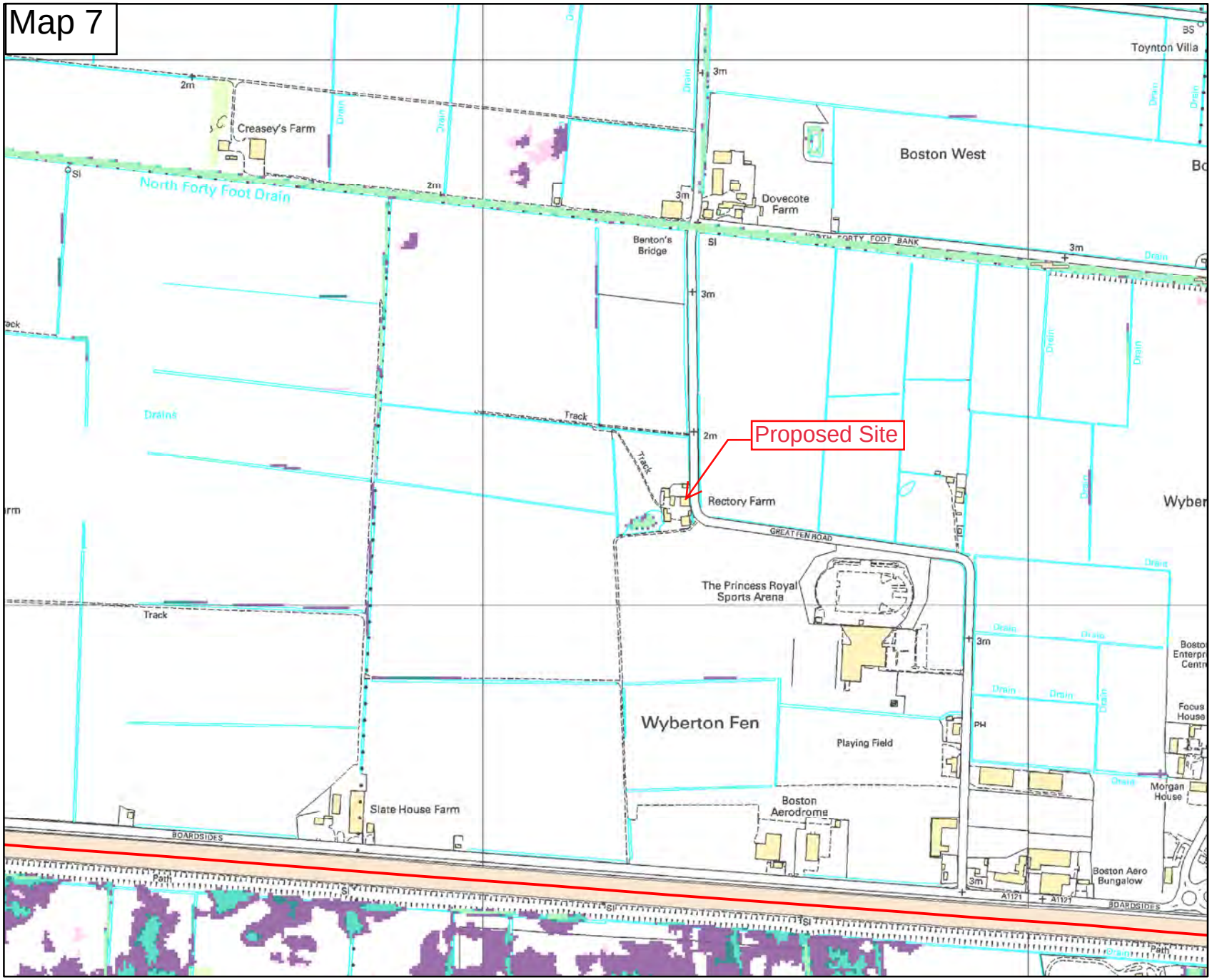
Modelled Flood Extents (with defences) Model: South Forty Foot Drain Date: 2016

Map 7



Environment Agency

Scale 1:9,900

N W E S

Legend

- Main River
- 5% (1 in 20) Fluvial Event
- 1% (1 in 100) Fluvial Event
- 1% (1 in 100) Fluvial Event inc Cimate Change
- 0.1% (1 in 1000) Fluvial Event
- 0.1% (1 in 1000) Fluvial Event inc Cimate Change

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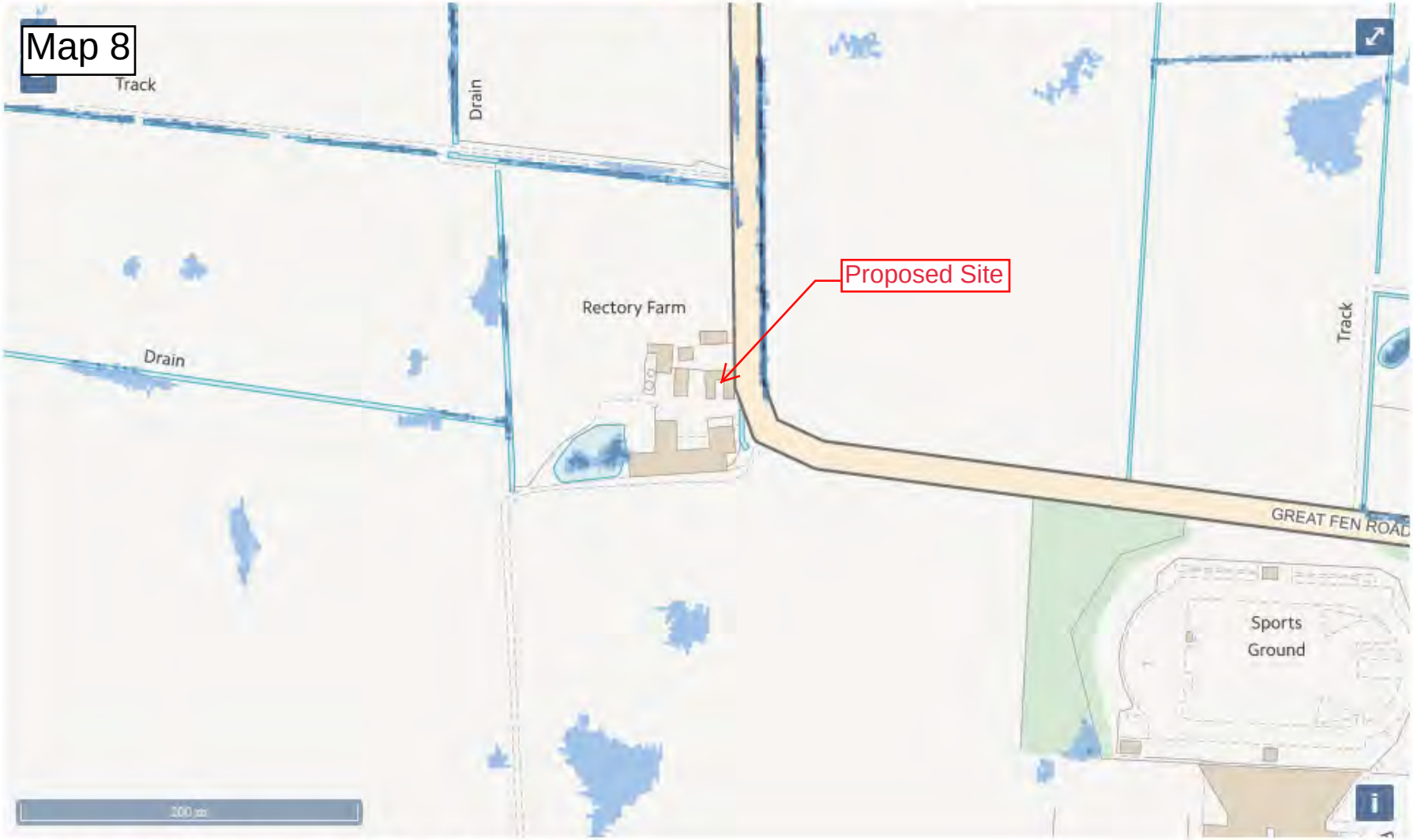
Flood risk

Low risk: depth

Location

Rectory Farm



Surface water flood risk: water depth in a low risk scenario

Flood depth (millimetres)

Over 900mm 300 to 900mm Below 300mm

Plan 1

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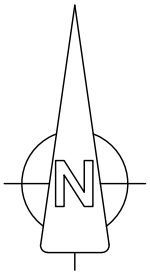


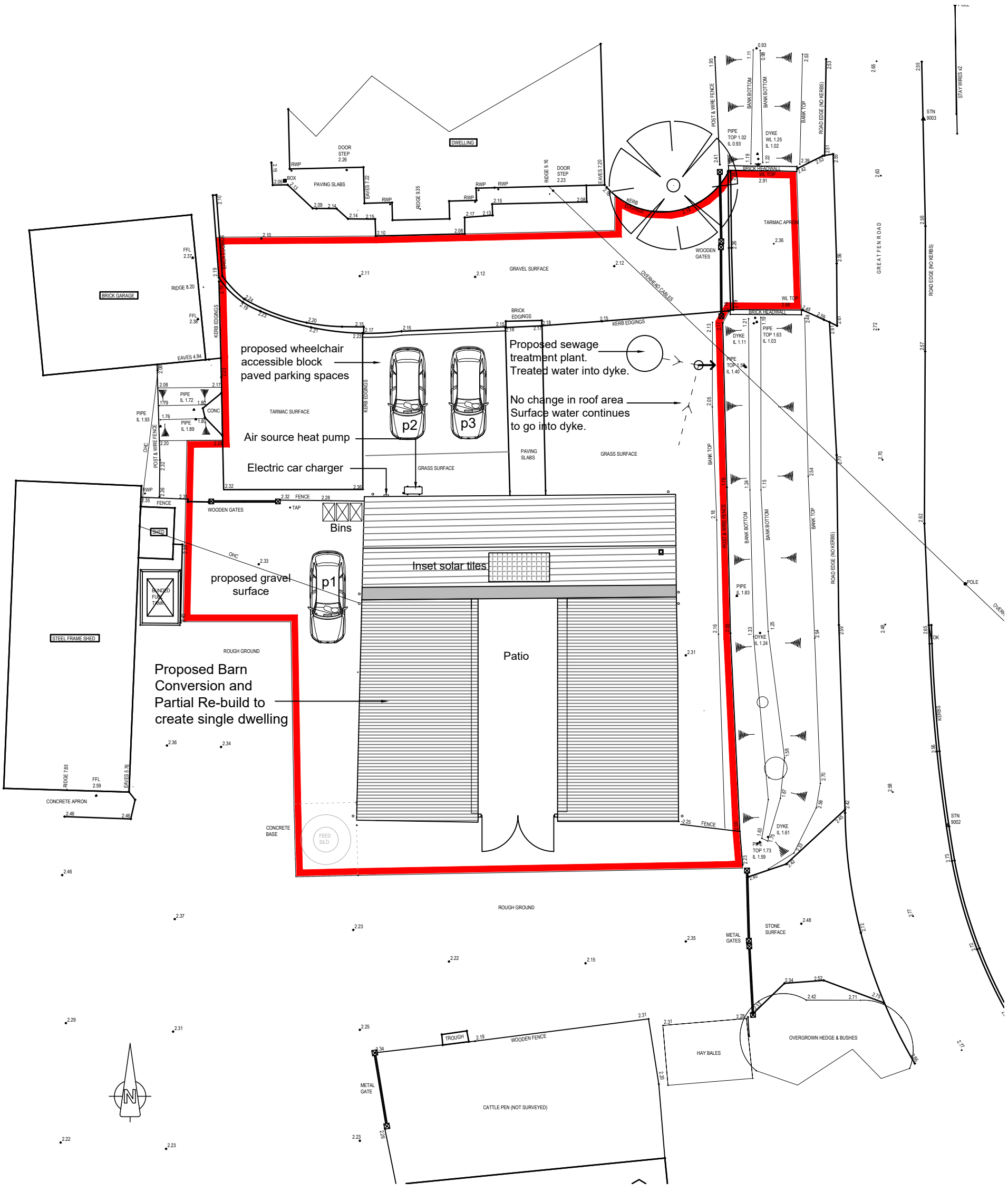
Location Plan

J M A D Architecture

www.jennymcintee.co.uk info@jmadarch.co.uk Tel 07921 003153

Project:	Conversion of Barn to Dwelling	Date:	November 2020		
Address:	Rectory Farm, Great Fen Road Boston Lincs PE21 7PB	Scale:	1:1250 on A4		
		drawn:	JM TB	checked:	JM
Client:	Mr G Dunmore	Job No:	20115		
Drawing Title:	Location Plan	Dwg No:	01 A		

Plan 2



Site Block Plan

Rev B Jan 2021 Amendments to roof & floor level.
Rev A Dec 2020 Amendments to design.

DRAINAGE
Foul drainage to Sewage Treatment Plant
Surface water drains as existing

SCALE

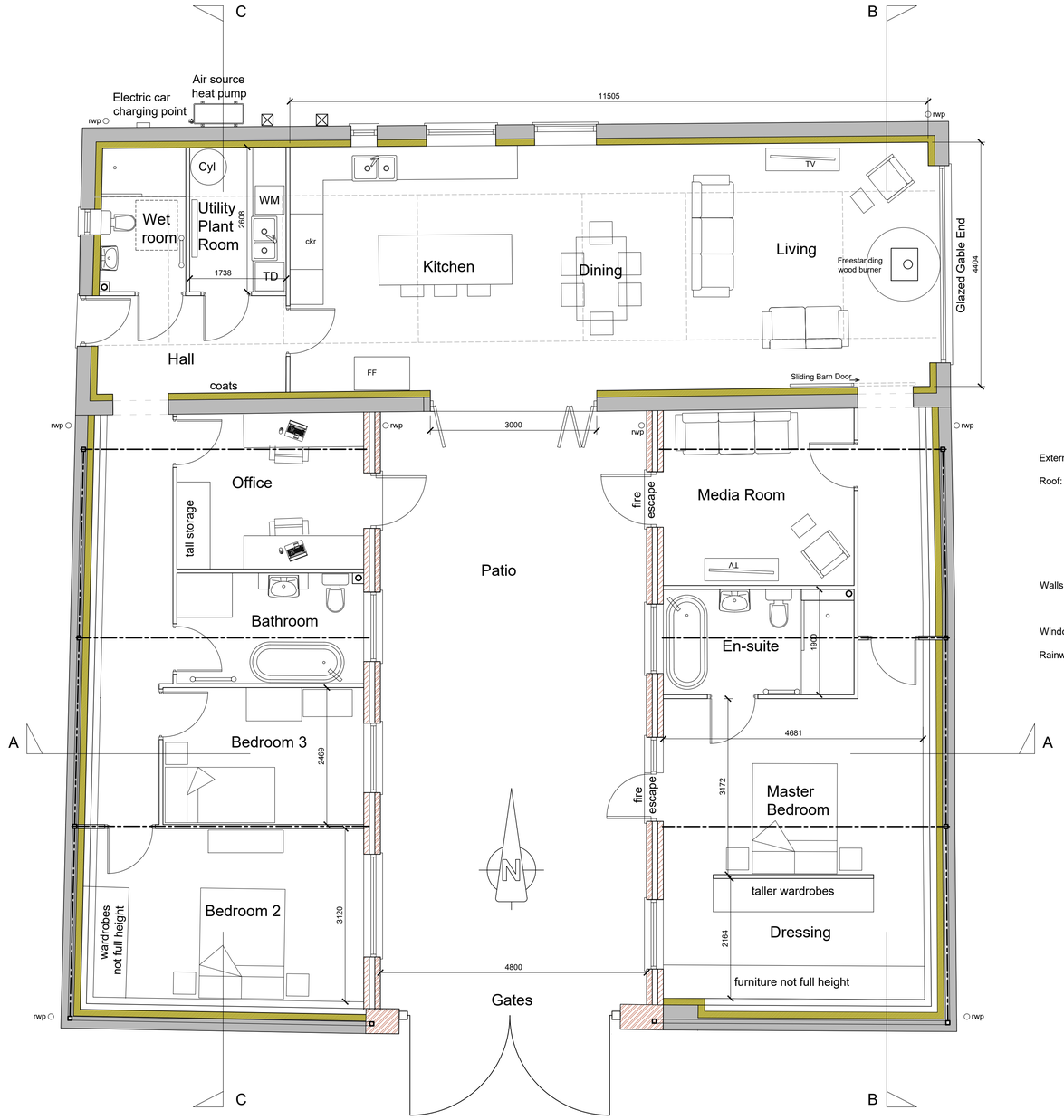
0 5 10 15 20 25m

J M A D Architecture

www.jennymcintee.co.uk info@jmadarch.co.uk Tel 07921 003153

Project:	Conversion of Barn to Dwelling	Date:	November 2020
Address:	Rectory Farm, Great Fen Road Boston Lincs PE21 7PB	Scale:	1:200 on A3
		drawn: JM TB	checked: JM
Client:	Mr G Dunmore	Job No:	20115
Drawing Title:	Site Plan as Proposed	Dwg No:	02 B

Plan 3

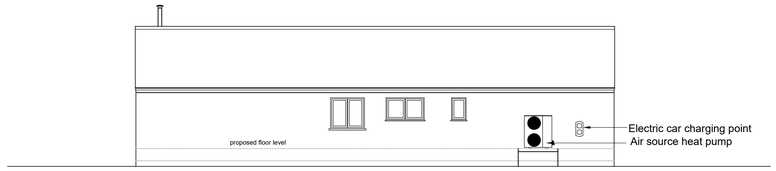


Proposed Plan

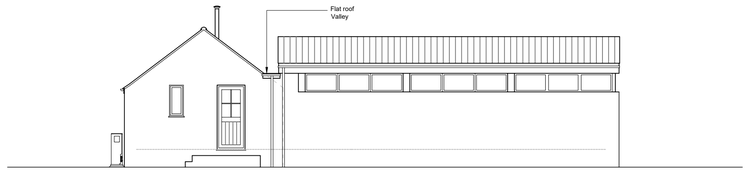
Proposed Finished Floor Area Approx 170 sq metres

External Materials:

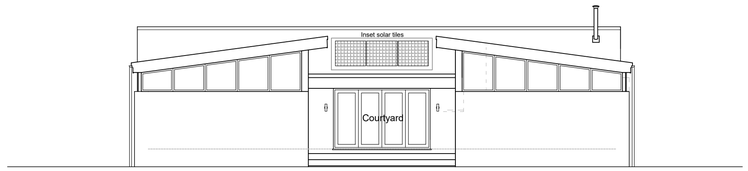
Roof:	Existing pitched roof - Flat imitation slate tiles in grey to match the farm house. Re-built roof on the two rear wings - Aluminium standing seam with traditional "Dark Zinc Patina" finish Flat roof valley - fibreglass
Walls:	Red brick to match existing Composite timber cladding and Aluminium standing seam on the internal courtyard walls.
Windows:	Anthracite grey aluminium windows and doors.
Rainwater goods:	Black half round gutters.



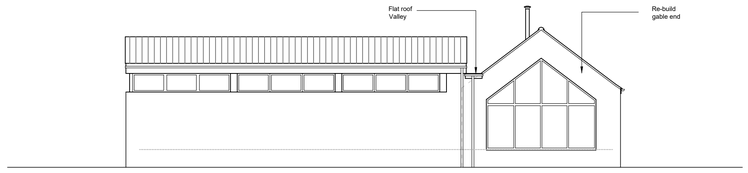
Front Elevation



Side Elevation



Rear Elevation



Side Elevation

1:50 0 3 6 9 12 15 feet / 0 1 2 3 4 5 m

1:100

East Facing Courtyard Elevation

West Facing Courtyard Elevation

Rev C Jan 2021 Removed feature barn door and replaced window.
Rev B Jan 2021 Amendments to roof & floor level.
Rev A Dec 2020 Amendments to design.

J M A D Architecture
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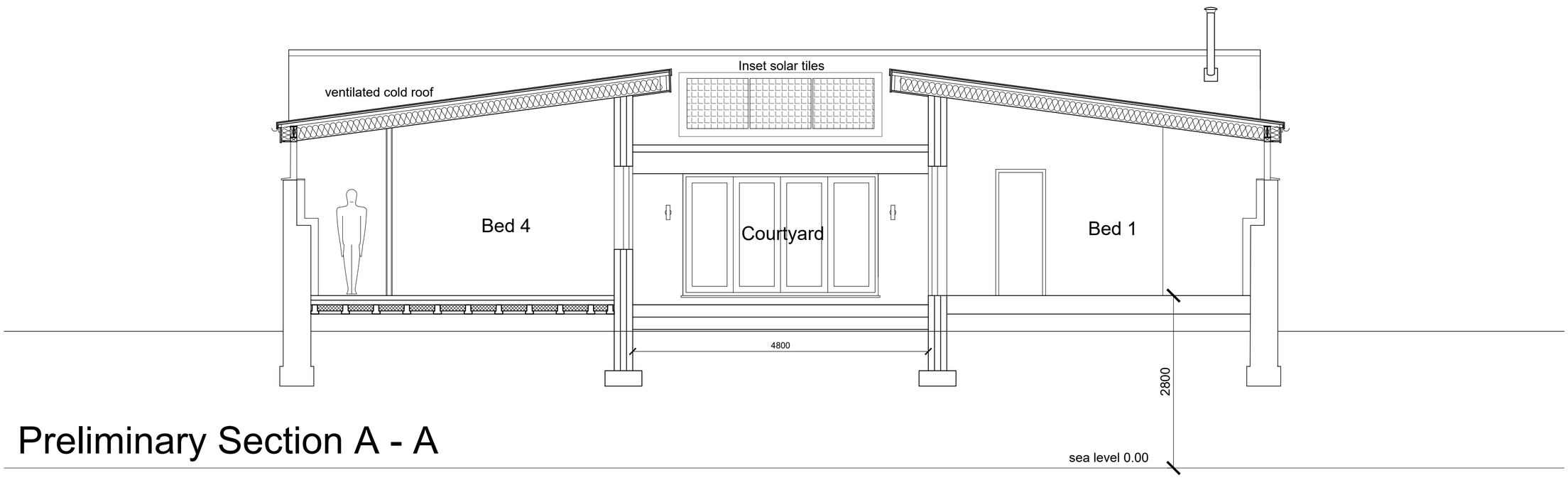
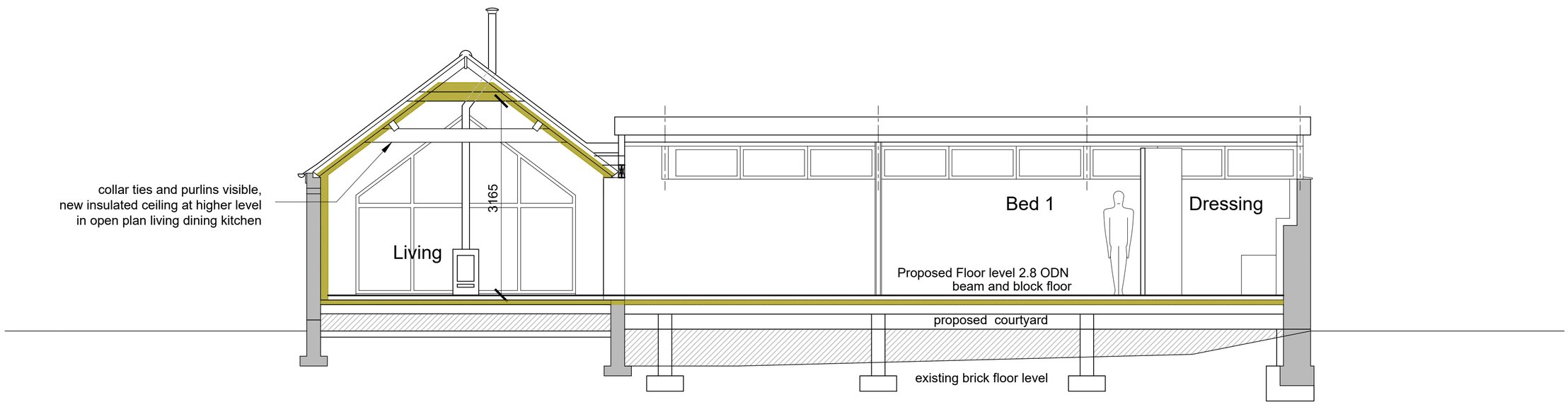
Project:	Conversion of Barn to Dwelling	Date:	November 2020
Address:	Rectory Farm, Great Fen Road Boston Lincs PE21 7PB	Scale:	1:50 &1:100 on A1
		drawn: JM TB	checked: JM
Client:	Mr G Dunmore	Job No:	20115
Drawing Title:	Proposed Plan & Elevations	Dwg No:	04 C

Proposed Floor Plan & Elevations

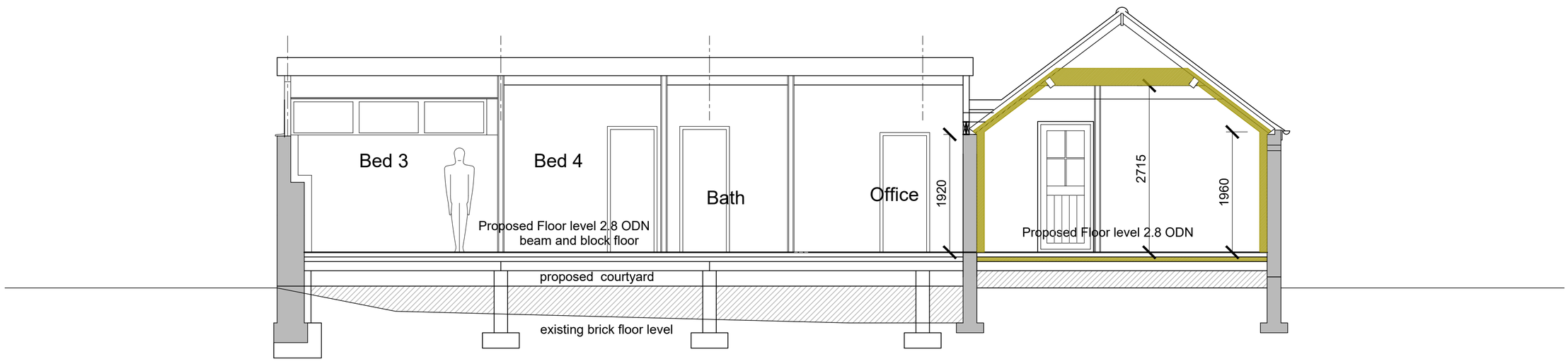
Plan 4



Preliminary Section A - A



Preliminary Section B - B



Preliminary Section C - C

Rev B Jan 2021 Amendments to roof & floor level.
Rev A Dec 2020 Amendments to design.

Proposed Sections

1:50

0 3 6 9 12 15 feet

0 1 2 3 4 5 m

J M A D Architecture

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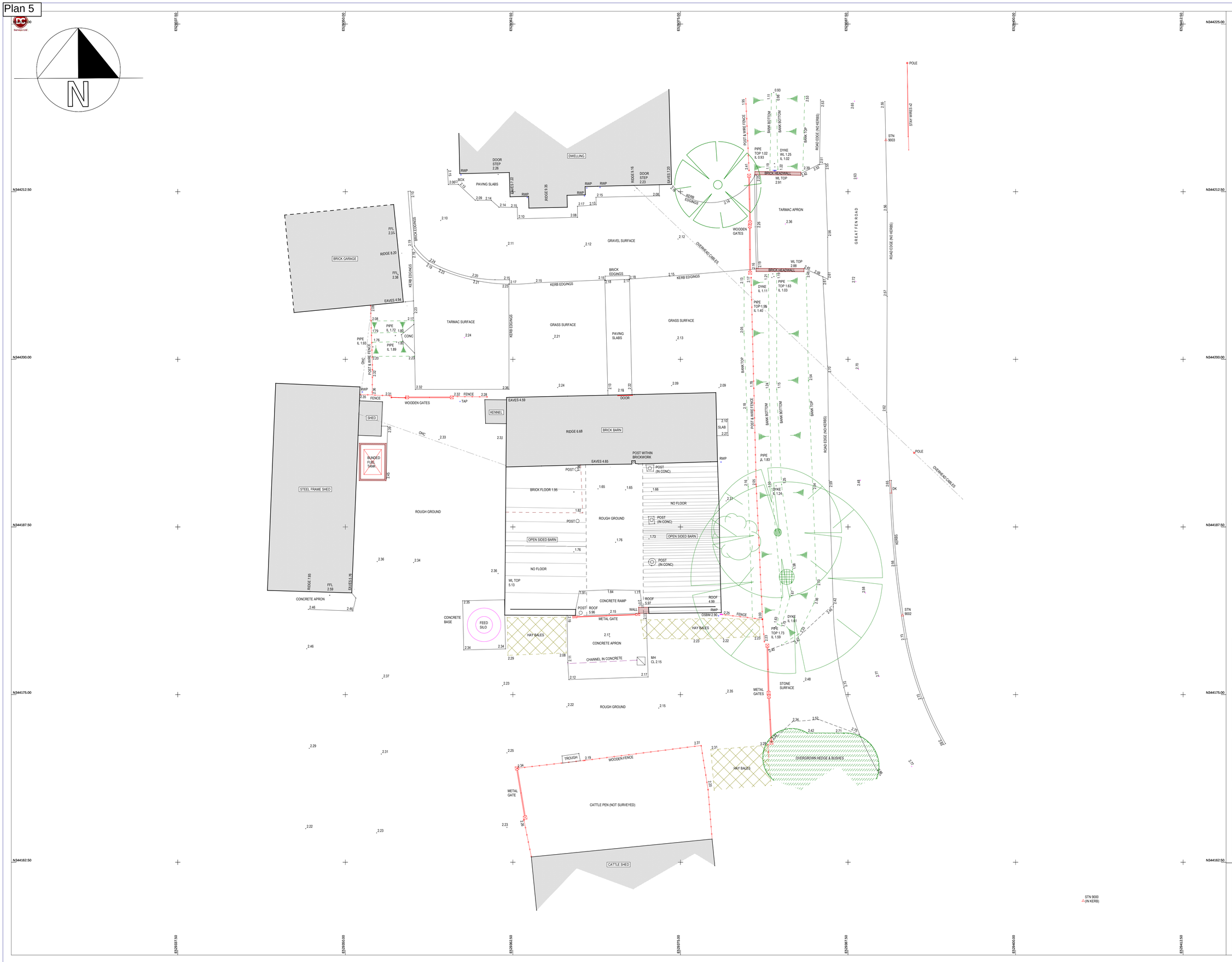
Project:	Conversion of Barn to Dwelling	Date:	November 2020
Address:	Rectory Farm, Great Fen Road Boston Lincs PE21 7PB	Scale:	1:50 on A1
		drawn: JM TB	checked: JM
Client:	Mr G Dunmore	Job No:	20115
Drawing Title:	Proposed Sections	Dwg No:	05 B

Plan 5



NOTES

ABBREVIATIONS & SYMBOLS

AV	AIR VALVE	OHC	OVERHEAD CABLE
BH	BORE HOLE	PB	POST BOX
BOL	BOLLARD	PINV	PIPE INVERT LEVEL
CATV	CABLE TV MH	PM	PARKING METER
CCTV	SECURITY CAM	PO	POST
CL	COVER LEVEL	PT	PIPE TOP LEVEL
CH.	CHANNEL	P/R	POST & RAIL FENCE
COL	COLUMN	P/W	POST & WIRE FENCE
DC	CABLE TV LID	RD	EDGE OF ROAD/NO KERB
DP	DOWN PIPE	RE	RODDING EYE/POINT
DR	DRAIN	RL	RIDGE LEVEL
EL	EAVES LEVEL	RP	REFLECTIVE POST
EP	ELECTRIC POLE	RS	ROAD SIGN
ER	EARTH ROD	SLVL	STONE LEVEL
FB	FLOWER BED	SOFF	SOFFIT LEVEL
FH	FIRE HYDRANT	SV	VALVE
FFL	FINISHED FLOOR LEVEL	SW	SURFACE WATER
FP	FLAG POLE	Tac	TACTILE PAVING
FW	FOUL WATER	TH	TRIAL HOLE
GV	GAS VALVE	TL	TRAFFIC LIGHTS
HW	HEADWALL	TLVL	TARMAC LEVEL
IC	INSPECTION COVER	TOW	TOP OF WALL LEVEL
IL	I NVERT LEVEL	TP	TELEGRAPH POLE
KB	KERB BOTTOM	TRK	TRACK
KO	KERB OFFLET	UTL	UNABLE TO LIFT
KT	KERB TOP	VP	VENT PIPE
LP	LAMP POST	WL	WATER LEVEL
LC	LIGHT COLUMN	WLVL	WATER LEVEL
MH	MANHOLE	WM	WATER METER
MP	MARKER POST	WO	WASH OUT POINT

FENCE, HEDGE, ELECTRIC, BANK EDGE, STORM LINE, FOUL LINE, TELECOM LINE, GAS LINE, LARSON PILES, CHANNELS, WATER MAIN, TREE, BOREHOLE, STATION, TBM, MANHOLE, GULLY, BATTER, WATER LVL, GATE

1. THE POSITION OF THIS SURVEY IS BASED ON GPS OSTN15 GRID.

2. ALL LEVELS RELATE TO GPS DATA ACQUIRED WITH TRIMBLE VRS.

3. TREES SPREADS ARE DRAWN TO SCALE AND SHOW THE GENERAL/AVERAGE CANOPY SPREAD.

4. ALL BELOW GROUND LEVEL INFORMATION INCLUDING VOIDS, DRAINAGE & SERVICES HAVE BEEN IDENTIFIED FROM THE SURFACE LEVEL ONLY. THEREFORE PIPE SIZES ETC ARE ESTIMATIONS ONLY. ALL CRITICAL DIMENSIONS SHOULD BE CHECKED PRIOR TO THE COMMENCEMENT OF ANY SITE WORKS

5. EVERY EFFORT HAS BEEN MADE TO LOCATE AND SURVEY ALL VISIBLE FEATURES. IT SHOULD BE NOTED THAT SOME ITEMS MAY HAVE BEEN OBSCURED AT THE TIME OF THE SURVEY AND THEREFORE NOT SHOWN ON THIS DRAWING.

6. PHYSICAL BOUNDARY FEATURES SHOWN ON THIS DRAWING DO NOT NECESSARILY REPRESENT THE ACTUAL LEGAL BOUNDARIES. THIS INFORMATION SHOULD BE CONFIRMED WITH THE RELEVANT DOCUMENTATION.

7. THE CONTRACTOR MUST CHECK AND VERIFY ALL SITE LEVELS, DIMENSIONS, UTILITIES AND DRAINAGE DETAILS PRIOR TO THE COMMENCEMENT OF ANY SITE WORKS. ANY DISCREPANCIES MUST BE NOTIFIED TO DANIEL CHARLES SURVEYS LTD.

8. ALL SURVEY STATION CONTROL POINTS MUST BE CHECKED BY THE CONTRACTOR PRIOR TO STARTING ANY SITE WORKS.

SURVEY CONTROL POINT INFORMATION

Point	Easting	Northing	Elevation
9000	529405.043	344159.620	2.887
9002	529391.564	344180.911	2.765
9003	529390.329	344216.351	2.577

SURVEY DATE	30/09/2020	INITIALS	MJW

REV	AMENDMENTS	DRN	DATE

Client:
JMAD ARCHITECTURE

Project Title:
RECTORY FARM
GREAT FEN ROAD
BOSTON - LINCS

Drawing Title:
TOPOGRAPHICAL SURVEY

Scale @ A1: 1:125	Date: 30/09/2020
Drawing No: 20 - 184 - 01	Rev:
C.A.D.Title: jmad rectory farm great fen road boston\master topo (20-184-01).mjo	
Drawn By: MJW	Checked By: SRW

Daniel Charles Surveys Ltd
Land Surveying & Engineering Services
Honeywood Barn, Honeyholes Lane,
Dunholme, Lincoln, LN2 3SU
Tel : 01673 860444 Fax : 01673 863362
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Website : www.daniel-charles.co.uk