FLOOD RISK ASSESSMENT

PROPOSED BARN CONVERSION
DECOY FARM
POSTLAND ROAD
CROWLAND
LINCS.
PE6 0LX

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INTRODUCTION

The Government has placed increasing priority on the need to take full account of the risks 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 March 2012, (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.

The Environment Agency's flood maps show areas that are at risk, from fluvial and tidal flooding. These maps show the limits of the flood plain of the area which could be affected by flood events, over topping or breaching of flood defences. They are based on the approximate extent of floods with a 1% annual probability of exceedance (1 in 100-year flood) for rivers and 0.5% annual probability of exceedance (1 in 200-year flood) for coastal areas under present expectations or the highest known flood. However, they do not consider of the presence of defences or the likelihood that flood return intervals will be reduced by climate change.

This Flood Risk Assessment and Drainage Statement has been prepared in support of a planning application and considers the risk of flooding from fluvial and tidal sources in accordance with National Planning Policy Framework (NPPF). It also considers the risks of localised flooding due to inadequate Foul and Surface Water Sewers, Failure of Reservoirs, Water Main pipe bursts, Sewer Blockages, Pump Failures or High Ground Water Table etc.

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APPLICATION SITE

The Barn which in part is two storeys is located at Decoy Farm, Postland Road, Crowland, Lincolnshire, PE6 0LX, and lies within the administrative area of South Holland District Council. The National Grid Reference for the site is TF 26263 12829. **Plan 1**

The proposal is to change the use of the existing redundant agricultural barn to a residential dwelling. **Plan 2.**

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 Technical Guidance NPPF 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%)

Flood Zone	Shading	Risk	Flood Risk Probability
1	Clear	Low	Less than 0.1% (1 in 1000 yrs)
2	Light blue	Medium	Rivers: between 1% (1 in 100 yrs) and 0.1% (1 in 1000 yrs) Sea: between 0.5% (1 in 200 yrs) and 0.1% (1 in 1000 yrs)
3	Dark Blue	High	Rivers: greater than 1% (1 in 100 yrs) Sea: greater than 0.5% (1 in 200 yrs)

The proposed development site is shown to be within Flood Zone 2 'Medium Probability' as detailed on the Environment Agency's Flood Zone Maps without defences, and as defined in Table 1 of NPPF**. Map1**

Table 1: Flood Zones Definition (Ignoring the presence of defences)

Zone 2 - medium probability

Definition
This zone comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year.

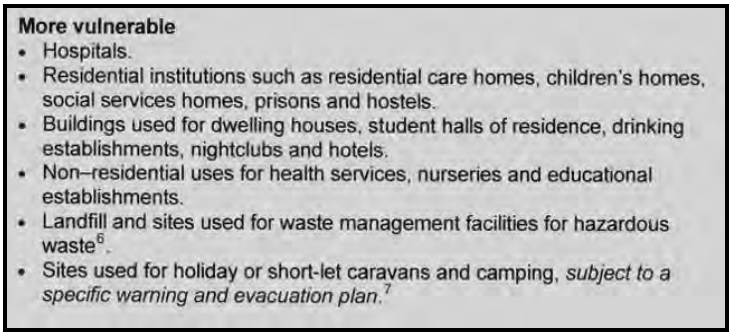
Appropriate uses
Essential infrastructure and the water-compatible, less vulnerable and more vulnerable uses, as set out in table 2, are appropriate in this zone. The highly vulnerable uses are *only* appropriate in this zone if the Exception Test is passed.

Flood risk assessment requirements
All development proposals in this zone should be accompanied by a flood risk assessment.

Policy aims
In this zone, 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 systems.

Applying the Flood Risk Vulnerability Classification in Table 2 of NPPF the existing use is classified as “Less Vulnerable” and the proposed residential use is classified as “More Vulnerable”, with Table 1 of NPPF stating that such uses are appropriate in this zone.

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[6].
- Sites used for holiday or short-let caravans and camping, *subject to a specific warning and evacuation plan.*[7]

From the topographical survey the land levels in front of the barn are 2.35mODN and the land falls away southwards away from the building to a level cicra 2.0mODN, with the existing ground floor level for the barn at 2.49mODN and the road level on Spalding Road at the site entrance at 2.50mODN. It is proposed that the ground floor level for the building be raised to 300m above the ground to 2.65mODN. **Plan 4**

The Environment Agency recommended that for Non-Major more vulnerable development located in Flood Zone 2 the finished floor level should be 300mm above the ground level in accordance with Standing Advice.

The change of use will be designed to take into account the potential flood depth at the site following a breach to the flood defences for the 1 in 100-year event with climate change to the River Welland.

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 source of flooding affecting the development site has been identified as:

- From the River Welland and the Crowland Washlands
- North Level IDB watercourses

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.

These maps show that the site of the proposed development is considered at risk from flooding. The maps indicate that the area would be flooded without flood defences, which are in place along the coastal edge (with an annual probability of more than 0.5% i.e. return frequency of less than 1 in 200-year for tidal flooding or more than 1.33% return frequency of less than 1 in 100 years for fluvial flooding). (**Map 1)**

The NFRA Flood Map shows that the site is not affected by surface water flooding. Low means that each year, this area has a chance of flooding of less than 1 in 100 (1%) but greater than or equal to 1 in 1000 (0. 1%).This takes into account the effect of any flood defences that may be in this area. Flood defences reduce, but do not completely stop the chance of flooding as they can be overtopped or fail. **Map 2**

In fenland areas, such as Crowland, this can give a slightly misleading picture in that if there were no flood defences the fens would revert to their natural wetland state, with water spreading out across the whole fens. This flooding would cover large areas of land but to relatively shallow depths and would leave the slightly higher land as isolated dry islands. The Environment Agency recommend that in these fen areas the floor level is raised 300mm above the ground level.

Flood defences are, however, present throughout the fenlands and these do reduce the risk of flooding. Whilst the flood defences are generally in a good condition there is always a chance they can be overtopped or fail during extreme floods. With the water level in the river being above the adjacent ground level a failure of the defence could lead to flooding spreading further than identified on the flood map.

River Welland

The site is located approximately 2700m from the River Welland Crowland Washes, a controlled flood storage area on the River Welland. Flood levels in the Washes are governed by the level in the River Welland and the structures which control flow of water between them. The Wash lands are located to the east of the River Welland and the right bank is lower than the left bank any over topping on this stretch of river will therefore be into the Wash lands.

				Annual Exceedance Probability Maximum Water Levels (mODN)				Bank Levels (mODN)	
Label	Easting	Northing	4% 1 in 25	1% 1 in 100	1% +CC 1 in 100	0.1% 1 in 1000	0.1%+CC 1 in 1000	Left Bank	Right Bank
Welland 26264	523195	312324	4.77	4.83	4.87	4.86	4.88	See Map	Crest
Welland 28279	522727	310477	4.85	4.95	4.99	4.00	5.00		
Welland 29693	521524	309795	4.91	5.05	5.09	5.09	5.11		

Source (Welland Catchment Flood Map Improvements Model (August 2007)

The fluvial defences protecting this site consist of earth embankments in conjunction with a flood storage reservoir which are in a good/ condition and provide a protection against a flood event with a 1% chance of occurring in any one year (1 in 100). The crest level of this embankment is typically between 5.80m and 6.20m ODN. This provides a free board of at least 0.8Om within the washlands, which will accommodate the predicted increase due to climate change.

Within the vicinity of the development site there are two flood storage areas known as Cowbit Washes and Crowland Washes into which floodwaters can be directed and stored in times of high flows. **Map 3**

From the above figures, it has been demonstrated that for flooding events up to 1in 100 year these can be contained within the existing river systems both now and for the lifetime of the development.

The Environment Agency recommends that appropriate mitigation measures / flood resilience techniques are incorporated in the design of the development. For More Vulnerable uses in Flood Zone 2, ideally the FFL to be above the flood level where this is not practicable the floor level for single storey buildings should be set as high as practicable above the existing ground level, minimum of 300mm, with flood resilient construction used to a height of 300mm above the predicted flood level and if possible a place of safe refuge at high level should be provided.

It is proposed that the ground floor level for the proposed property be set in accordance with the Environment Agency's recommendations, stated above, to a level of 2.65mODN (300mm above ground level 2.35mODN.)

South Holland District Council

In order to inform the process of risk assessment and site selection the District Council commissioned Haskoning UK Ltd Consultants to prepare a Strategic Flood Risk Assessment in December 2002.They have carried out an update of this report and this report was published in January 2010

This Flood Risk Assessment has taken the results of the updated South Holland Strategic Flood Risk Assessment (SHSFRA) into account in its findings.

It was found that the actual risk from primary sources of flooding (taken as being rivers and the sea) was assessed as being the product of:

- Medium probability (assigned because the standards of the primary defences are variable) and
- Low consequence (assigned because of the District's generally rural nature and because any urban flooding is likely to be shallow with minimal impact).

The findings reflect the considerable protection afforded to the area by coastal and tidal & fluvial flood defences and by the extensive well organised system of lowland IDB fluvial drainage.

The computer modelling used in the SFRA to produce the Hazard, depth and velocity maps simulated the spread of flood waters over the land and allowed for the presence of locally raised features such as road embankments etc. The maps produced by the Environment Agency took a more precautionary approach.

In order to inform the process of risk assessment and site selection the District Council commissioned Haskoning UK Ltd Consultants to prepare a Strategic Flood Risk Assessment in December 2002.They have carried out an update of this report and this report was published in January 2010. The area around Crowland

however was not covered for hazard mapping. so, classification of 'no hazard' may not be correct. Tidal and the River Nene sources do not reach site.

The computer modelling used in the SFRA to produce the Hazard, depth and velocity maps is currently being updated. Following an enquiry to SHDC Planning office they have said this is not yet available for Public Use. Therefore, the Environment Agency recommendations for developments in Flood Zone 2 and fen land areas have been used.

North Level Internal Drainage Board

The site lies within the administrative area of the North Level Internal Drainage Board who has powers under the Land Drainage Act to carry out measures to alleviate flooding in Districts with special drainage needs other than Main River. The site is within the Postland drainage area which drains to Postland Pumping Station constructed in 1973 as part of the North Level Major Improvement Scheme, originally designed to evacuate surplus water from an agricultural area of 2567 hectares. In more recent years with the residential expansion of Crowland, 6.5 hectares of urban run-off now discharges directly into the drainage system. To accommodate this extra flow, the drainage channel has been increased in size to store surplus water without increasing pump capacity, this work being funded by the developers.

Alongside the eastern Boundary there is a Board maintained watercourse ref 702 Brotherhouse Drain.

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 falling southwards away from the site and the with site towards a non-embanked riparian watercourse, 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 area is not known to suffer from any groundwater problems.

- Flooding from sewers can occur from over loading from heavy rainfall caused by blockages or having inadequate capacity. There are no sewers in the vicinity of the site.

- 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 in excess of 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.

SEQUENTIAL APPROACH

When considering the sequential approach for flood risk from fluvial flooding in accordance with NPPF, the site would fall into Zone 2 (Medium Probability) as defined in Table 1: Flood Zones, and illustrated on the Environment Agency's Flood Maps.

Sequential Test

Table 3: Flood risk vulnerability and flood zone 'compatibility'

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

NPPF Guidance Paragraphs 100 - 104 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.

Within Flood Zones 2 & 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 building is not an option. As set out in the National Planning Policy Framework (para.104) and associated Technical Guidance (para.10), 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 19th February 2016.

The site is located within the Anglian Basin, for sites within Flood Zone2 and for "More vulnerable" land uses the Higher Central and Central river flow allowances figures in Table 1 should be used.

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 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 allowance for each epoch in (mm) per year with cumulative sea level rise for each epoch in brackets (use 1990 baseline)					
Area of England) (Use River Basin maps	1990 to 2025	2026 to 2050	2051 to 2080	2081 to 2115	Cumulative Rise 1990 to 2115 (m)
East, Midlands, London, South East	4 (140mm)	8.5 (212.5mm)	12 (360mm)	15 (525mm)	1.24m

INFRASTRUCTURE

Construction on any undeveloped area has the potential to increase the rates and volumes of surface water run-off, due to the replacement of pervious land with impervious surfaces. In this case the areal footprint of the buildings, access tracks and other infrastructure is unchanged therefore the surface water will discharge to the existing outfalls which have proved satisfactory over a number of years.

Foul Water

Due to the remoteness of the site and no public sewers close by, the foul sewage from the proposed dwelling will be discharged into a 5-person package treatment unit.

FLOOD PROTECTION

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 actually entering a

building.

- **Flood-resilient works: -** these reduce the amount of damage caused by water entering the building.

The proposed property 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 to be constructed with a solid concrete floor with no voids beneath and no low level wall vents.
- In accordance with Standing Advice for Non-major more vulnerable developments in Flood Zone 2, the ground floor level for the residential dwelling is to be raised 300mm to 2.65mODN.
- Fix plasterboard horizontally to the ground floor areas for ease of renewal.
- Avoid the use of absorbent cavity insulation to the ground floor level.
- Arrange for all service circuits to be routed at high level where practical socket outlets, boilers etc. to be a minimum of 0.5m above the raised upper ground floor 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

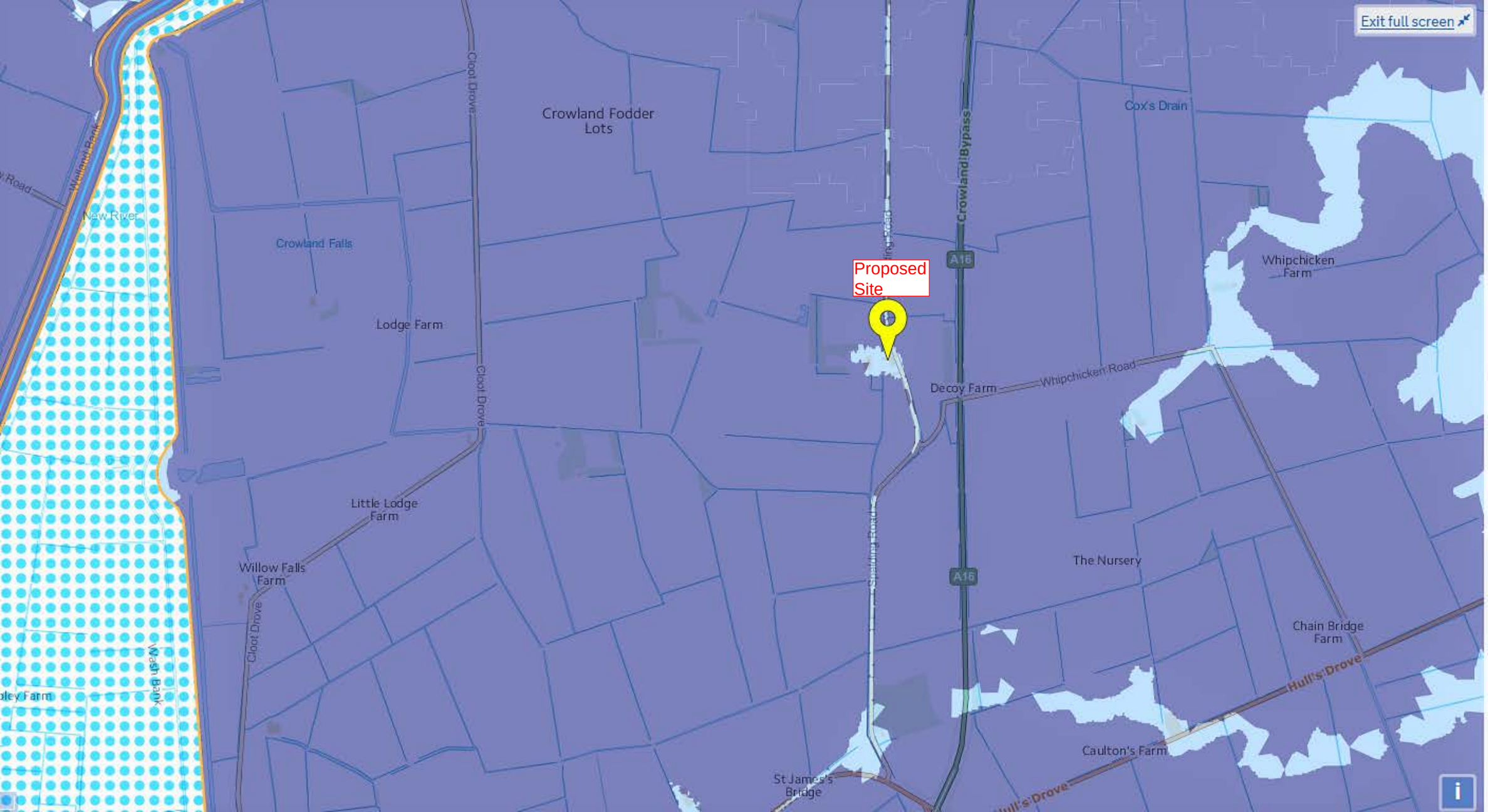
- The proposed development site is shown to be within Flood Zone 2 ‘Medium Probability' as detailed on the Environment Agency's Flood Zone Maps without defences, and as defined in Table 1of NPPF.
- With the development for the site being” More Vulnerable” use, it is proposed that the ground floor level for the proposed residential use be set in accordance with the Environment Agency’s recommendations for developments in Flood Zone 2, and within Fen land areas, to a level of 2.65mODN (300mm above the average ground level).
- There are no local site specific risks that would adversely affect the flood risk categorisation of the site. Similarly, there are considered to be no increased risk of offsite flooding risks as a result of the development. The site is therefore considered suitable for the type of development proposed.
- With there being a first floor for part of the development this area provides a safe haven for the residents.

- Any drainage routes through the Site will be maintained both during the works and after completion of the works. The upstream and downstream riparian owners and any areas that are presently served by any drainage routes passing through or adjacent to the site, will not be adversely affected by the development, as there are no changes to these, proposed by the development.

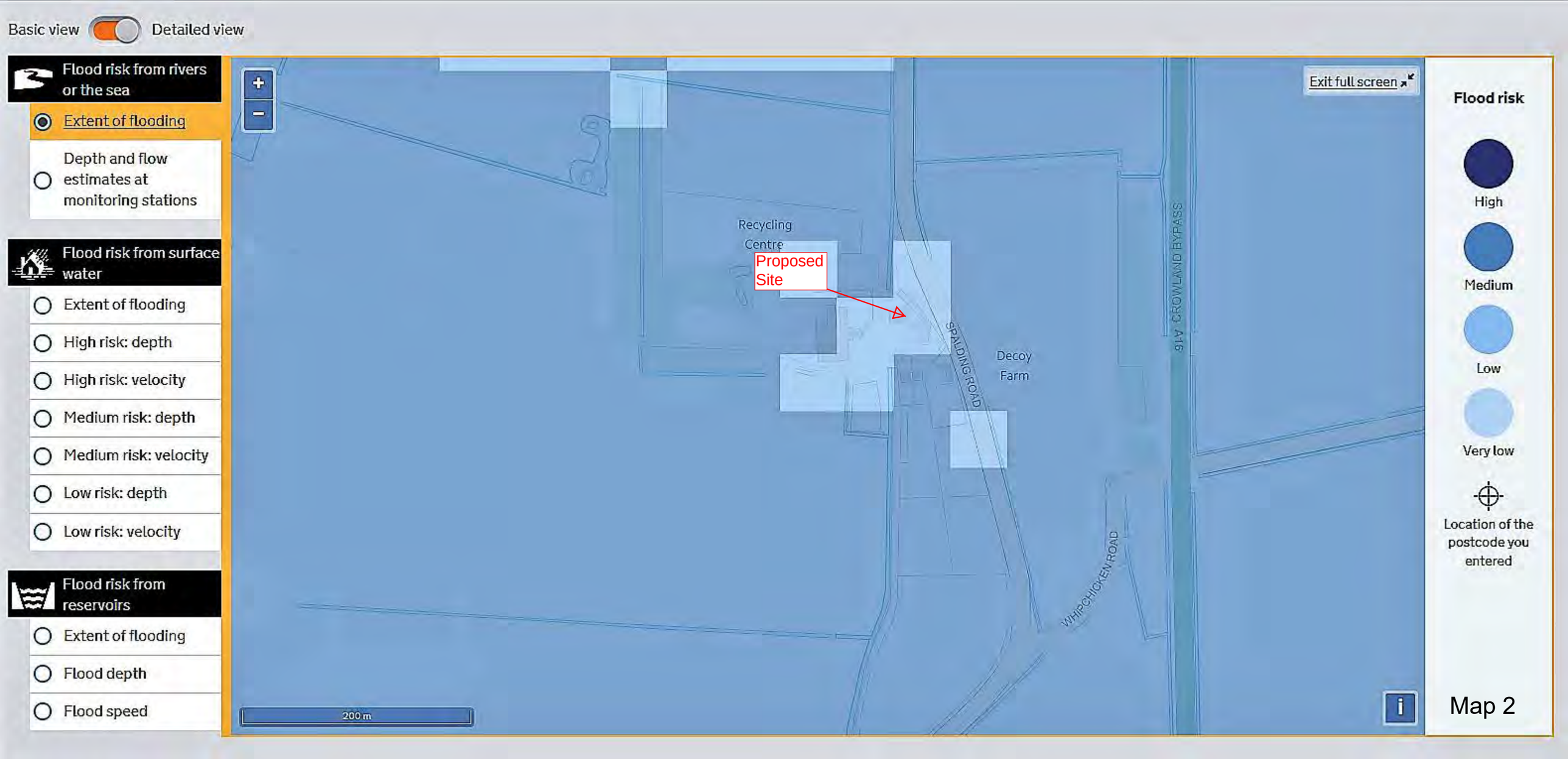
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APPENDIX

Map 1	Environment Agency Flood Map
Map 2	Flooding from Rivers & Sea Map
Map 3	Surface Water Flood Map
Map 4	Washland Location Plan
Plan 1	Site Location Plan
Plan 2	Existing Floor Plans
Plan 3	Proposed Floor Plans
Plan 4	Proposed Elevations
Plan 5	Topographical Survey


Exit full screen
Crowland Fodder Lots
Cox's Drain
Crowland Bypass
Cloot Drove
New River
Crowland Falls
Lodge Farm
Proposed Site
A16
Whipchicken Farm
Decoy Farm
Whipchicken Road
Little Lodge Farm
Willow Falls Farm
Spalding Road
The Nursery
Chain Bridge Farm
Hull's Drove
Caulton's Farm
St James's Bridge
Development location
Flood zone 3
Flood zone 2
Flood zone 1
Areas benefiting from flood defences
Flood defence
Main river
Flood storage area

Map 1


Basic view
Detailed view
Flood risk from rivers or the sea
Extent of flooding
Depth and flow estimates at monitoring stations
Flood risk from surface water
Extent of flooding
High risk: depth
High risk: velocity
Medium risk: depth
Medium risk: velocity
Low risk: depth
Low risk: velocity
Flood risk from reservoirs
Extent of flooding
Flood depth
Flood speed
Exit full screen
Recycling Centre
Proposed Site
SPALDING ROAD
Decoy Farm
A16 CROWLAND BYPASS
WHIPCHICKEN ROAD
200 m
Flood risk
High
Medium
Low
Very low
Location of the postcode you entered
Map 2

Basic view Detailed view

Flood risk from rivers or the sea

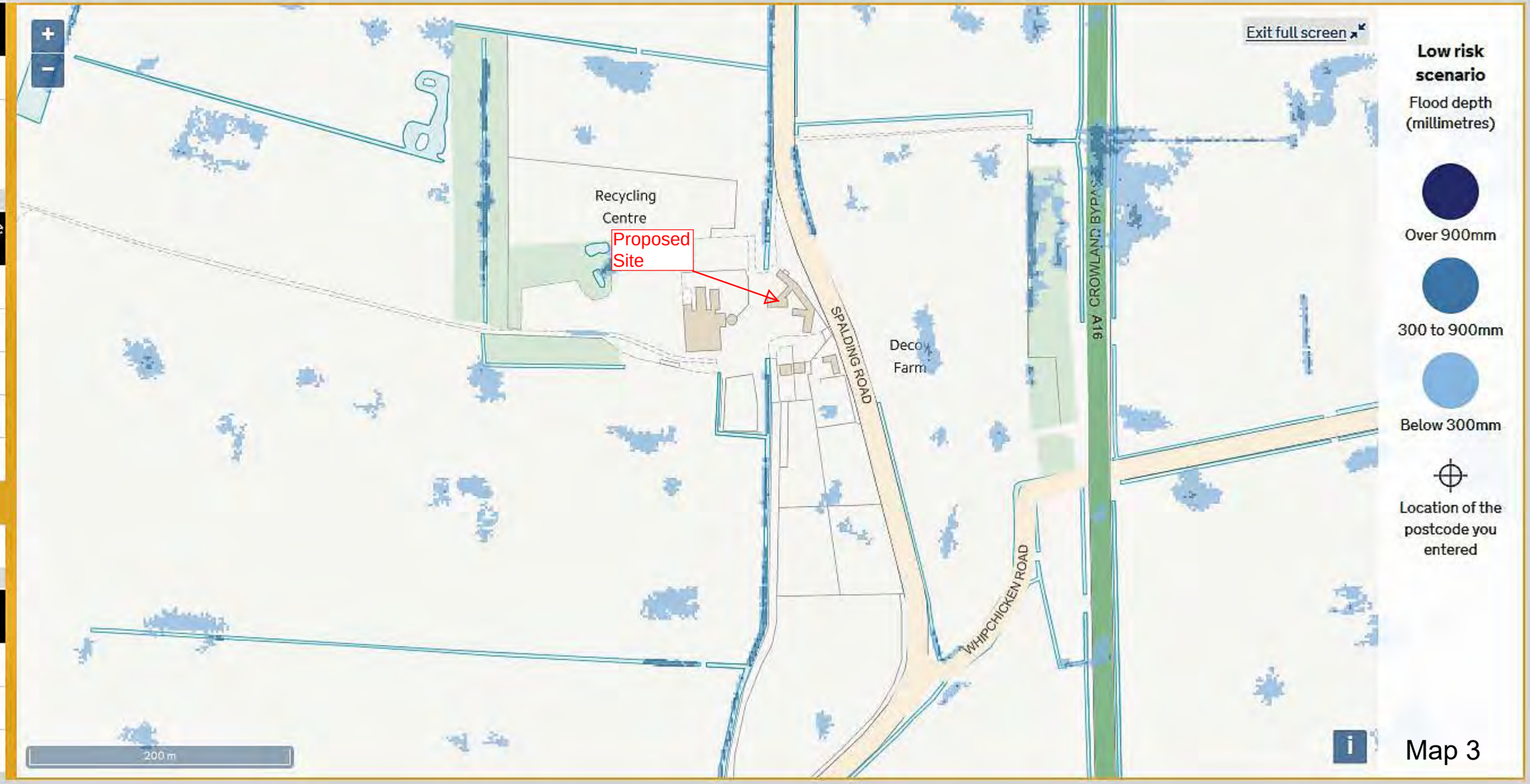
- Extent of flooding
- Depth and flow estimates at monitoring stations

Flood risk from surface water

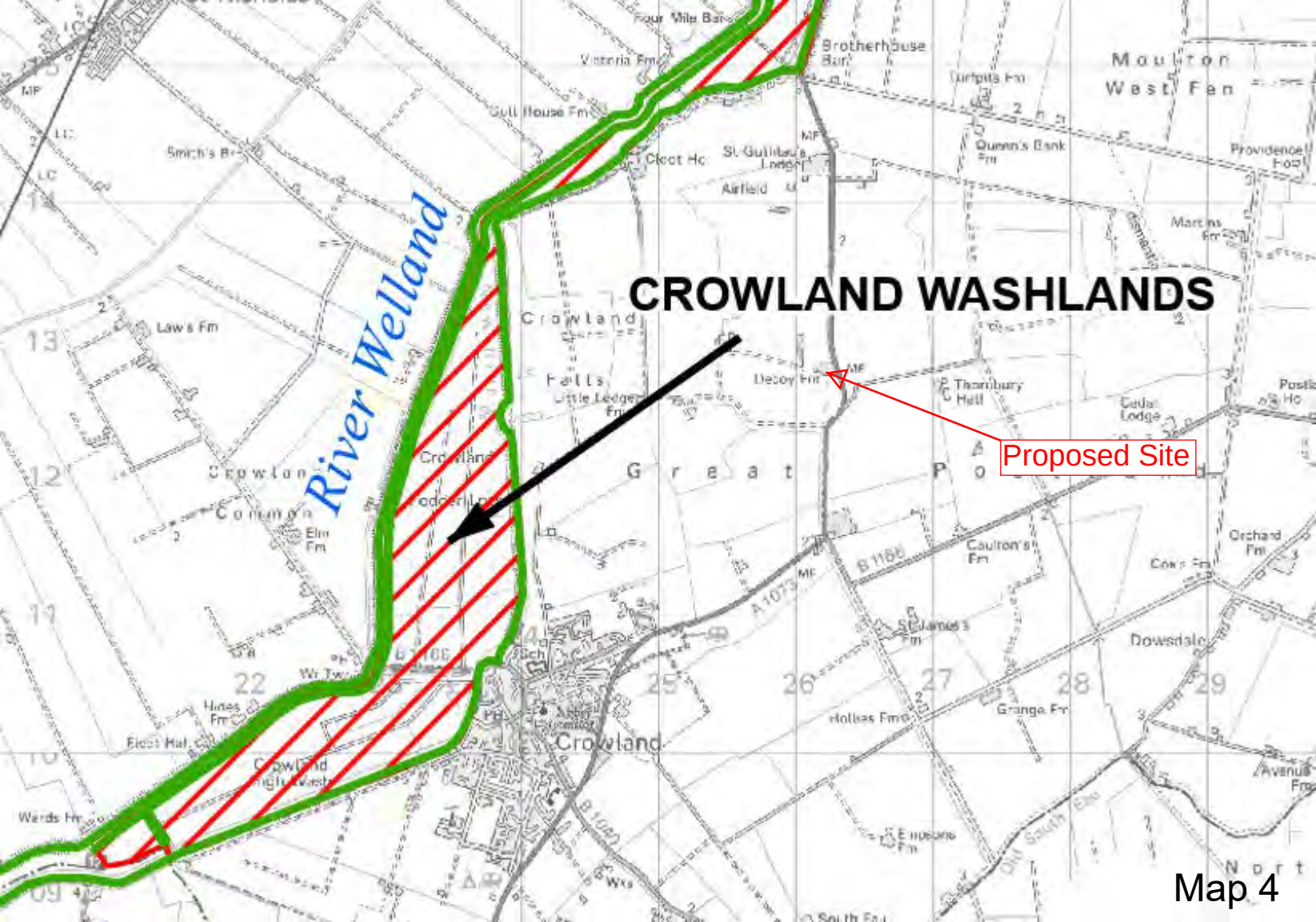
- Extent of flooding
- High risk: depth
- High risk: velocity
- Medium risk: depth
- Medium risk: velocity
- Low risk: depth
- Low risk: velocity

Flood risk from reservoirs

- Extent of flooding
- Flood depth
- Flood speed



Map 3

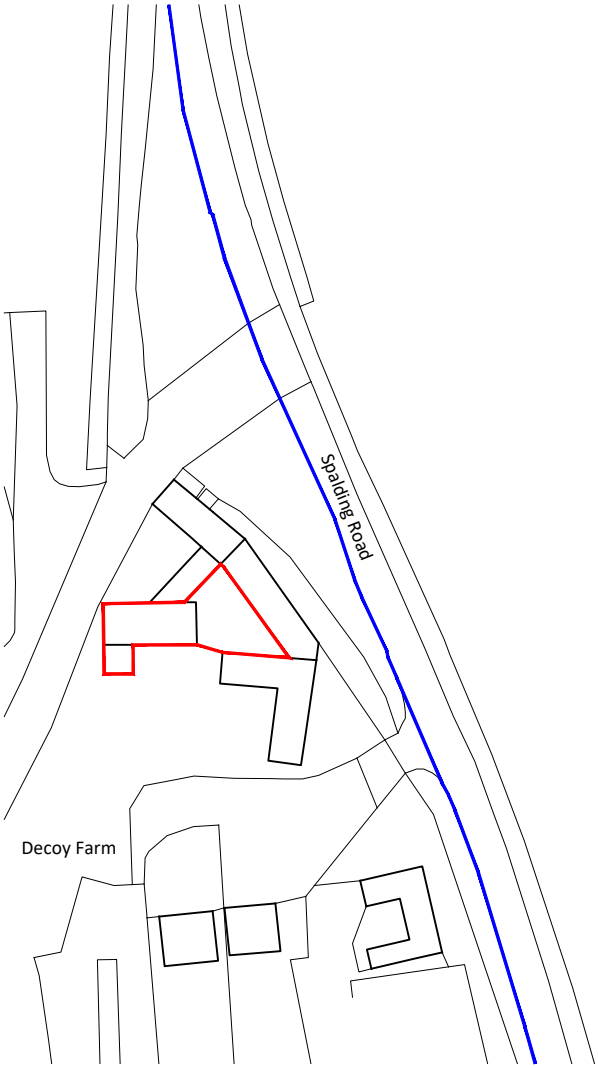

CROWLAND WASHLANDS
River Welland
Proposed Site
Crowland
Great
Moulton West Fen
Brotherhouse Bar
Four Mile Bar
Victoria Fm
Gull House Fm
Smith's Br
Cleot Hc
St Guthlac's Priory
Airfield
Queen's Bank Fm
Providence Fm
Martins Fm
Laws Fm
Falls
Little Ledger Fm
Decoy Fm
Thornbury Hall
Cedar Lodge
Crowland Common
Elm Fm
Caulton's Fm
Orchard Fm
Cows Fm
B 1166
A 1073
St James's Fm
Dowsdale
Hollies Fm
Grange Fm
Avenue Fm
Hines Fm
Elect Hall
Crowland Angle Washes
Wards Fm
B 1040
Old South Eau
Map 4

Notes

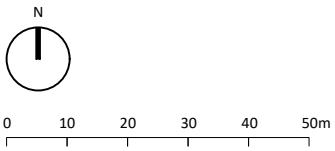
Measurements
All measurements should be checked against on site conditions and any discrepancies should be brought to the attention of the Robert Doughty Consultancy.

CDM 2015

This drawing is for illustrative purposes and/or obtaining the relevant planning permission only. It should not be used for construction and accordingly, risk identification under the Construction (Design & Management) Regulations 2015 has not been undertaken.



Location Plan



Rev	By	Notes	Date

rdc
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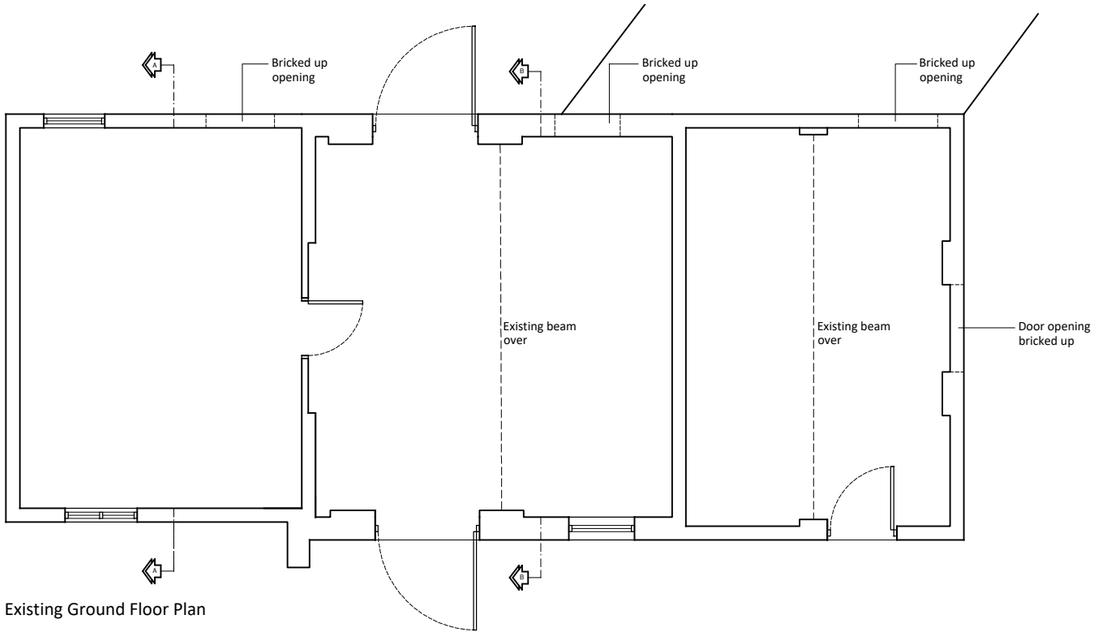
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Project: Change of Use at Decoy Farm		
Drawing title: Location Plan		
Drawing No: 1021-5_SK_LP01	Rev: -	Drawn: GMG
Scale: 1:1250 @A4	Date: 02.03.17	Checked: MD

Plan 1

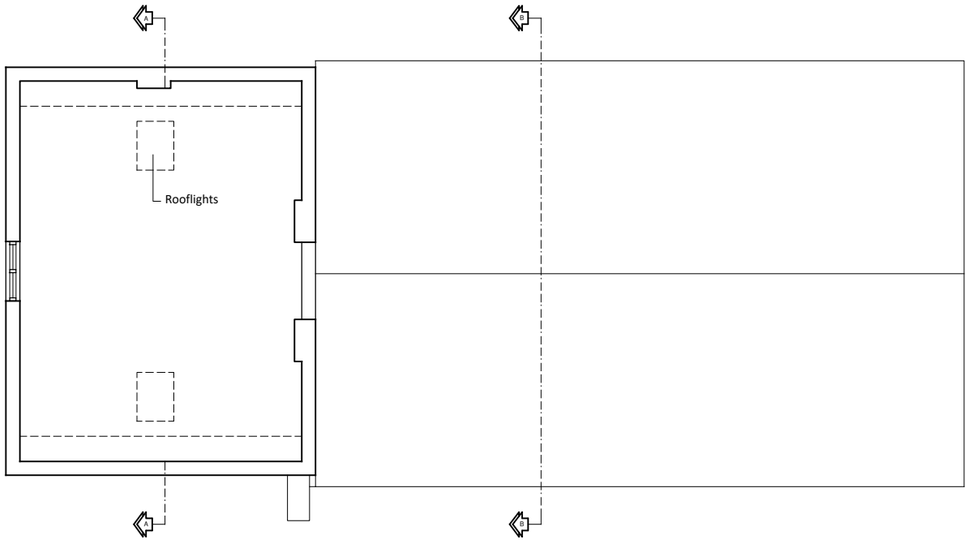
Notes

Measurements
All measurements should be checked against on site conditions and any discrepancies should be brought to the attention of the Robert Doughty Consultancy.

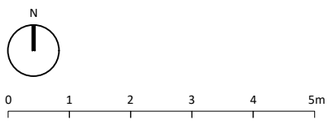
CDM 2015
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Existing Ground Floor Plan



Existing First Floor Plan



Rev	By	Notes	Date

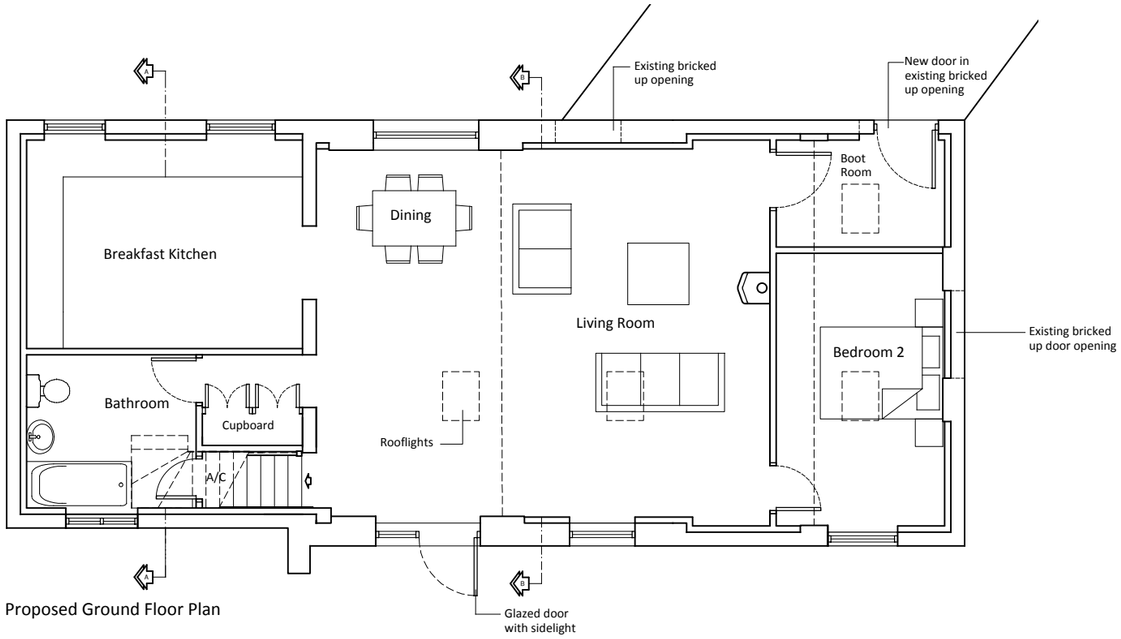
rdc Robert Doughty Consultancy

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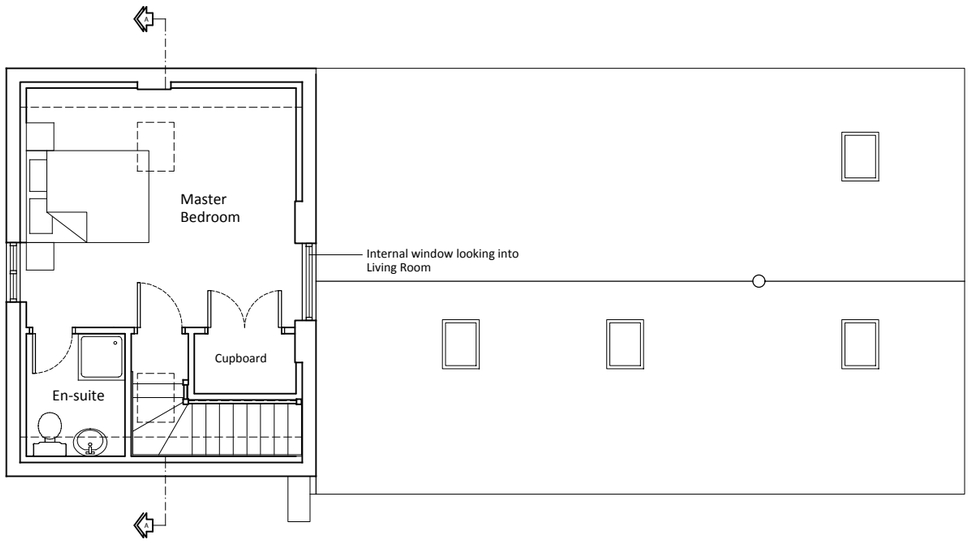
Tel: 01529 421646
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Client: Organic Recycling Ltd		
Project: Change of Use at Decoy Farm		
Drawing title: Existing Plans		
Drawing No: 1021-5_SK_PL01	Rev: -	Drawn: GMG
Scale: 1:100 @A3	Date: 02.03.17	Checked: MD

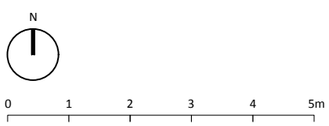
Plan 2



Proposed Ground Floor Plan



Proposed First Floor Plan



Notes

Measurements
All measurements should be checked against on site conditions and any discrepancies should be brought to the attention of the Robert Doughty Consultancy.

CDM 2015
This drawing is for illustrative purposes and/or obtaining the relevant planning permission only. It should not be used for construction and accordingly, risk identification under the Construction (Design & Management) Regulations 2015 has not been undertaken.

Rev	By	Notes	Date
A	GMG	Updated to client amendments	20.03.17

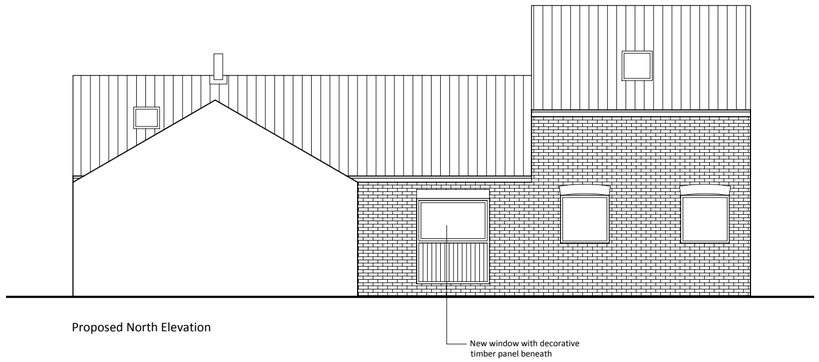
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Client: Organic Recycling Ltd		
Project: Change of Use at Decoy Farm		
Drawing title: Proposed Plans		
Drawing No: 1021-5_SK_PL02	Rev: A	Drawn: GMG
Scale: 1:100 @A3	Date: 02.03.17	Checked: MD

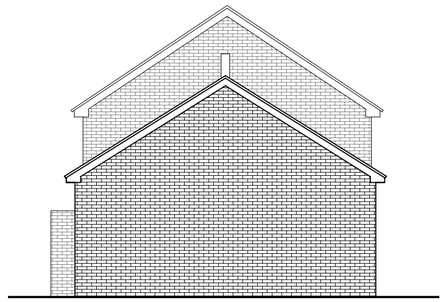
Notes

Measurements
All measurements should be checked against on site conditions and any discrepancies should be brought to the attention of the Robert Doughty Consultancy.

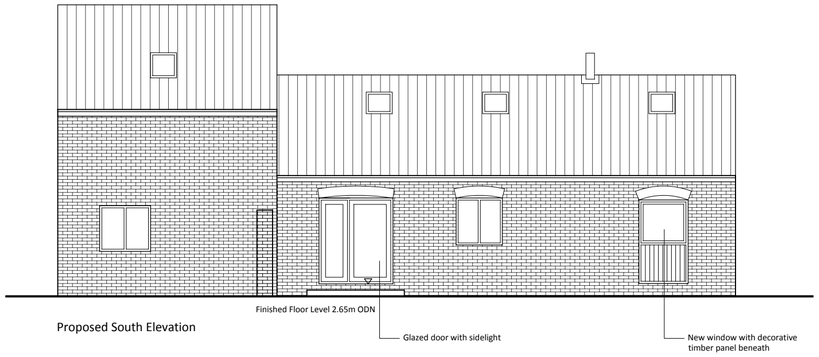
CDM 2015
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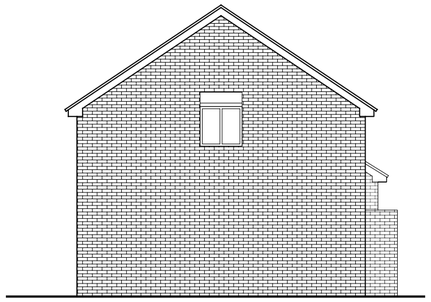
Proposed North Elevation



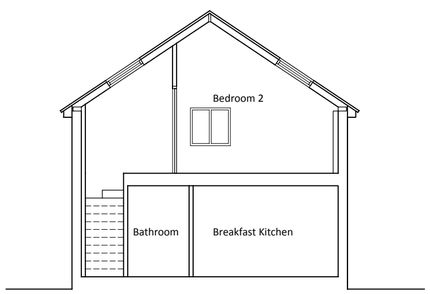
Proposed East Elevation



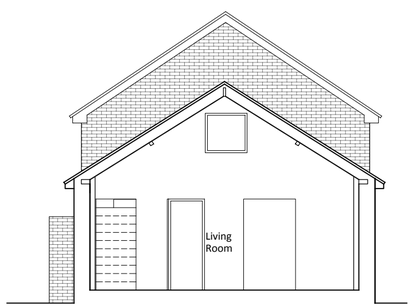
Proposed South Elevation



Proposed West Elevation



Proposed Section AA



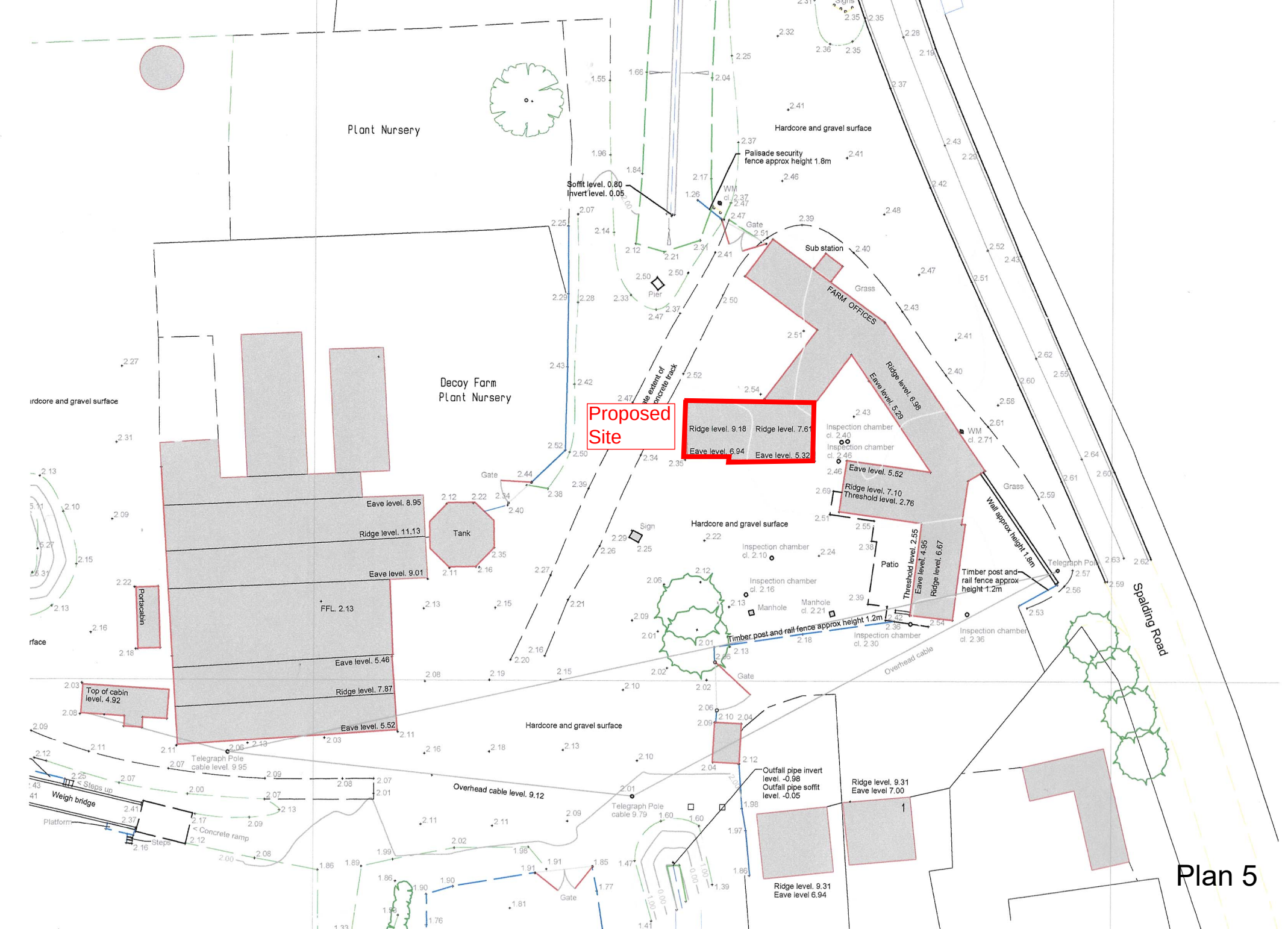
Proposed Section BB

0 1 2 3 4 5m

Rev	By	Notes	Date
A	GMG	Updated to client amendments	20.03.17

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Client: Organic Recycling Ltd			
Project: Change of Use at Decoy Farm			
Drawing title: Proposed Elevations and Sections			
Drawing No: 1021-5_SK_EL02	Rev: A		Drawn: GMG
Scale: 1:100 @A2	Date: 02.03.17		Checked: MD


Plant Nursery
Hardcore and gravel surface
Palisade security fence approx height 1.8m
Soffit level. 0.80
Invert level. 0.05
WM cl. 2.37
Gate
Sub station
Pier
Grass
FARM OFFICES
Ridge level. 6.98
Eave level. 5.29
Decoy Farm
Plant Nursery
Proposed Site
Ridge level. 9.18
Ridge level. 7.61
Eave level. 6.94
Eave level. 5.32
Inspection chamber cl. 2.40
Inspection chamber cl. 2.46
WM cl. 2.71
Eave level. 5.52
Ridge level. 7.10
Threshold level. 2.76
Wall approx height 1.8m
Eave level. 8.95
Ridge level. 11.13
Tank
Sign
Hardcore and gravel surface
Inspection chamber cl. 2.10
Patio
Threshold level. 2.55
Eave level. 4.95
Ridge level. 6.67
Timber post and rail fence approx height 1.2m
Telegraph Pole
Spalding Road
Portacabin
FFL. 2.13
Eave level. 9.01
Eave level. 5.46
Ridge level. 7.87
Eave level. 5.52
Top of cabin level. 4.92
Manhole
Manhole cl. 2.21
Inspection chamber cl. 2.16
Inspection chamber cl. 2.30
Inspection chamber cl. 2.36
Overhead cable
Gate
Hardcore and gravel surface
Telegraph Pole cable level. 9.95
Overhead cable level. 9.12
Telegraph Pole cable 9.79
Outfall pipe invert level. -0.98
Outfall pipe soffit level. -0.05
Ridge level. 9.31
Eave level 7.00
Ridge level. 9.31
Eave level 6.94
Steps up
Weigh bridge
Platform
Steps
Concrete ramp
Gate
Plan 5