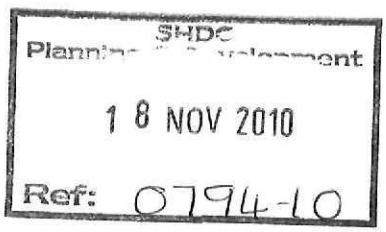
PPS 25 FLOOD RISK ASSESSMENT

PROPOSED CONVERSION OF EXISTING BARNS
TYSDALE MANOR
COMMON WAY
TYDD St. MARY
WISBECH
PE13 5QH



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Version 1 November 2010

FLOOD RISK ASSESSMENT FOR
PROPOSED CONVERSION OF EXISTING BARN
TYSDALE MANOR, COMMON WAY, TYDD St MARY, PE13 5QH

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 PPS 25 Development and Flood Risk, which identify 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..

PPS 25 expects planning decisions to recognise the importance of flood plains and avoid inappropriate development on undeveloped and undefended flood plains. The Government acknowledges however that there has been massive historic development alongside water corridors and that it would be unreasonable to place a blanket ban on the development of land in those situations where some continuing development is necessary for wider sustainable development reasons, taking into account the need to avoid social or economic blight, this is particularly relevant in lowland eastern England.

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 years flood) for coastal areas under present expectations or the highest known flood. However they do not take into account of the presence of defences or the likelihood that flood return intervals will be reduced by climate change.

Parts of lowland Britain have been identified as statutory areas with special drainage needs and are served by Internal Drainage Boards who have powers under the Land Drainage Act 1991 to carry out measures to alleviate flooding from ordinary watercourses.

This Flood Risk Assessment has been prepared in support of the planning application and considers the risk of flooding from fluvial and tidal sources in accordance with PPS25. 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.

This document has been prepared solely as a flood risk assessment on behalf of the client Mr B. Hendy. RM Associates accepts no responsibility or liability for any use of this document other than by the client for the purposes for which it was originally commissioned and prepared. If any unauthorised Third Party comes into procession of this report, they rely on it at their own risk and RM Associates owe them no duty of care or skill.

APPLICATION SITE

The site is located at Tysdale Manor, Common Way, Tydd St Mary, PE13 5QH within the South Holland District Council's administrative area. **Plan 1**

The Site would be classed as Non Major Development applying the Town & Country Planning (Consultation) (England) Direction 2009 as the site is to be developed for less than 10 dwellings

The National Grid Reference for the site is TF 44417 18662.

Tysdale Manor is a Grade II Listed Building. And to the rear lies a range of outbuildings that are listed by virtue of their location within the cartilage of Tysdale Manor. The current Planning Application is for the change of use of the barns to form two semi-detached dwellings with a single story extension and the erection of two detached garages/store. **Plan 2**

The site therefore can be classed as Brownfield land for which the Government in PPS 3 places great emphasis on the need for the redevelopment of previously developed land over Greenfield sites.

From the topographical survey the Common Way road level at the front of the property is 3.50mODN, with the ground level of the existing site circa 3.20m ODN. It is proposed that the minimum ground floor level for the new property will be150mm above the existing ground level. **Plan 3**

The proposed development site is shown to be within Flood Zone 3a "High Probability" with out the presence of flood defences, as detailed on the Environment Agency's Flood Zone Maps, and as defined in Table D1 of Planning Policy Statement 25 (PPS25). This zone comprises 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.

PPS25: Flood Zones Definition Table D1

Zone 3a High Probability

Definition

This zone comprises 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.

Appropriate uses

The water-compatible and less vulnerable uses of land in Table D.2 are appropriate in this zone.
The highly vulnerable uses in Table D.2 should not be permitted in this zone.
The more vulnerable and essential infrastructure uses in Table D.2 should only be permitted in this zone if the Exception Test (see para. D.9) is passed. Essential infrastructure permitted in this zone should be designed and constructed to remain operational and safe for users in times of flood.

FRA requirements

All development proposals in this zone should be accompanied by a FRA. See Annex E for minimum requirements.

Policy aims

In this zone, developers and local authorities should seek opportunities to:
i. 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;
ii. relocate existing development to land in zones with a lower probability of flooding; and
iii. create space for flooding to occur by restoring functional floodplain and flood flow pathways and by identifying, allocating and safeguarding open space for flood storage.

Applying the Flood Risk Vulnerability Classification in Table D2 of PPS25, the proposed development use for residential is classified as "More Vulnerable", with Table D1 of PPS25 stating that such uses are permitted in this zone. Paragraph 4.42 of PPS25 Practice Guide; 2009 states that "PPS25 states in paragraph D15 that *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.*

PPS25: Flood Risk Vulnerability Classification Table D2

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.20 - Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

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

- From the River Nene (tidal)

The Flood Zone Maps identify river catchments over 3 sq. km. These maps are a theoretical estimate of areas of land that could be inundated by floodwater during a flooding event was it not for the presence of flood defences. In practice current standards of protection would result in flood envelopes substantially less than shown by these maps. The maps make no allowance for local, site specific features.

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

River Nene

The site is located 2400m to the west of the River Nene. The 1 in 200 year flood level present day in the river channel is 5.79mODN and including for climate change (2115) is 6.93mODN. The left bank level is circa 7.50mODN.

The flood level in the Washes varies are set out below.

Location	Chainage	Peak 1 in 200 year extreme tide level (mOD)			Peak 1 in 1000 year extreme tide level (mOD)			Defence crest level (mOD)	Defence type	Freeboard (m) 1 in 200 Year Level			Freeboard (m) 1 in 1000 Year Level		
	(km)	2007	2055	2115	2007	2055	2115			2007	2055	2115	2007	2055	2115
South holland main Drair	5.7	5.85	6.18	6.99	6.19	6.52	7.33	7.07	Earth bank	1.22	0.89	0.08	0.88	0.55	-0.26
	5.8	5.84	6.17	6.98	6.18	6.51	7.32	6.89	Earth bank	1.05	0.72	-0.09	0.71	0.38	-0.43
	5.9	5.84	6.17	6.98	6.18	6.51	7.32	7.17	Earth bank	1.33	1.00	0.19	0.99	0.66	-0.15
	6.0	5.84	6.17	6.98	6.18	6.51	7.32	7.16	Earth bank	1.32	0.99	0.18	0.98	0.65	-0.16
	6.2	5.83	6.16	6.97	6.17	6.50	7.31	6.86	Earth bank	1.03	0.70	-0.11	0.69	0.36	-0.46
	6.3	5.83	6.16	6.97	6.17	6.50	7.31	7.19	Earth bank	1.36	1.03	0.22	1.02	0.69	-0.12
	6.4	5.83	6.16	6.97	6.17	6.50	7.31	7.14	Earth bank	1.31	0.98	0.17	0.97	0.64	-0.17
	6.5	5.82	6.15	6.96	6.16	6.49	7.30	7.20	Earth bank	1.38	1.05	0.24	1.04	0.71	-0.10
	6.6	5.82	6.15	6.96	6.16	6.49	7.30	7.17	Earth bank	1.35	1.02	0.21	1.01	0.68	-0.13
	6.8	5.81	6.14	6.95	6.15	6.48	7.29	7.07	Earth bank	1.26	0.93	0.12	0.92	0.59	-0.22
	7.0	5.81	6.14	6.95	6.15	6.48	7.29	7.17	Earth bank	1.36	1.03	0.22	1.02	0.69	-0.12
	7.2	5.80	6.13	6.94	6.14	6.47	7.28	7.06	Earth bank	1.26	0.93	0.12	0.92	0.59	-0.22
	7.4	5.80	6.13	6.94	6.14	6.47	7.28	7.22	Earth bank	1.42	1.09	0.28	1.08	0.75	-0.06
	7.6	5.79	6.12	6.93	6.13	6.46	7.27	7.33	Bank with road on crest	1.54	1.21	0.40	1.20	0.87	0.06
	7.7	5.79	6.12	6.93	6.13	6.46	7.27	7.33	Bank with road on crest	1.54	1.21	0.40	1.20	0.87	0.06
North Level Main Drain	7.8	5.79	6.12	6.93	6.13	6.46	7.27	7.58	Bank with road on crest	1.79	1.46	0.65	1.45	1.12	0.31

These levels are taken from the South Holland Strategic Flood Risk Assessment

The Environment Agency has produced hazard maps for both the present day and including climate change to year 2115 for flooding from the River Nene following a breach to the defences. The maps illustrate the likely maximum values of Hazard Rating, Depth and Velocity based on a combination of results from the assessment of individual breaches. Hazard Rating has been calculated using the intermediate approach (Table 13.1) of Flood Risk Assessment Guidance for New Development (FD2320).

a) 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.

HR = d x (v + 0.5) +DF

HR = (flood) hazard rating d = depth of flooding (m)

V = velocity of flood waters (m/sec) DF = debris hazard = 0.5. (1.0 depth above 250mm)

For the degree of Flood Hazard to be classified as low HR has to be <0.75.

Maps 2 & 3 show the results around the site for the east coast taken from the Environment Agency Northern Area Tidal Hazard Mapping 2009 Special Licence – Commercial (FRA/FCA-C) Ref: CCN/2010/25668

For the present day events and with climate change up to year 2115 is taken into account the site is not within a hazard area, therefore the residual risk of the site flooding is low. This has been confirmed in the e-mail from the Environment Agency dated 17 November 2010 below.

From the above figures it has been demonstrated that for flooding events up to 1in 200 year these can be contained within the existing river systems both now and for the 100year lifetime of the development.

E-mail from the Environment Agency

Ray Morgan

From: Coulling, Elizabeth [liz.coulling@environment-agency.gov.uk]
Sent: 17 November 2010 10:46
To: Ray Morgan
Cc: Kirk, Emma
Subject: CCN-2010-25668 - Tydd St Mary

Dear Mr Morgan,

I have investigated the differences shown in the hazard, depth and velocity maps. I can confirm that your site is not within the breach extents. It would appear than when the individual breach data from the South Holland SFRA was combined with our breach datasets it introduced a shift in the SFRA data. Thank you for bringing this to our attention.

Best Regards, Elizabeth

Elizabeth Coulling
Flood Risk Mapping & Data Management Team Member 1
Anglian Region, Northern Area.

Sustainably reducing the risk of flooding and its impact on people, property and the environment

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

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.

From the Actual Peak Depth District - Year 2115 1% Fluvial / 0.5% Tidal Event Probability from the update of strategic flood risk assessment for South Holland District Council the site is shown not to lie within a flood area. **Map 4**

The potential flooding consequences shown on this map relate to flooding from the sea, main rivers and Internal Drainage Board systems taking into account the presence of current flood risk management measures such as flood defences.

The consequences designated as being an Actual Risk arise from direct overtopping of defences, where this would occur, together with assumed breach failure of some defences. Breach failure has been assumed to occur in places where the freeboard between peak sea or river water level and the defence crest level is less than the minimum desirable for structural security of the defence.

South Holland Internal Drainage Board

The proposed development site is located within the catchment area of South Holland Drainage Board. The Board is responsible to operate and maintain the arterial fluvial system. **Map 5**

The Board's nearest maintained drain is over 500m east of the site and will not affect the proposed site

The Board do not have any record of any flooding in this area associated with the Board's system.

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 and no high ground around the development this will not cause any rapid inundation of the site and is likely only lead to local ponding of shallow depth and low velocity which will drain away into the riparian watercourses serving the area.

- 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. Again this would flow following the natural ground contour into riparian watercourses serving the area,

- 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 other known facilities close by which would affect the site.

SEQUENTIAL APPROACH

When applying the sequential approach for flood risk in accordance with Annex D PPS25 the site would fall into Zone 3a (High Probability) as the site is shown to be within the tidal flood plain as shown on the Environment Agency's Flood Map without defences in place.

The proposed use for residential development for the site falls within "The More Vulnerable" uses of land in Table D.3 Flood Risk Vulnerability Classification and Table D1 shows that developments of this nature is permitted in Zone 1. Development in Zones 2 and 3 is restricted based on Table D3 of PPS 25 replicated below.

Table D.3[22]: Flood Risk Vulnerability and Flood Zone 'Compatibility'

Flood Risk Vulnerability classification (see Table D2)		Essential Infrastructure	Water compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone (see Table D.1)	Zone 1	✔	✔	✔	✔	✔
	Zone 2	✔	✔	Exception Test required	✔	✔
	Zone 3a	Exception Test required	✔	✗	Exception Test required	✔
	Zone 3b 'Functional Floodplain'	Exception Test required	✔	✗	✗	✗

Key

✔ Development is appropriate

✗ Development should not be permitted

The proposed relocation for the replacement dwellings is shown on the flood maps to be within Flood Zone 3a and more vulnerable uses are permitted subject to passing the Exception Test.

Table D1 of PPS25 states that such uses are permitted in this zone. Paragraph 4.42 of PPS25 Practice Guide; 2009 states that "PPS25 states in paragraph D15 that *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.

Table B1

Parameter	1990 to 2025	2025 to 2055	2055 to 2085	2085 to 2115
Net sea level rise in mm/yr (relative to 1990)	4.0	8.5	12.0	15.0
Peak rainfall intensity	+5%	+10%	+20%	+30%
Peak river flow	+10%	+20%		
Offshore wind speed	+5%		+10%	
Extreme wave height	+5%		+10%	

The annual sea rise due to climate change is given in Table B1, PPS25 and the recommended contingency allowances are stated above:-

2006-2025 = 4mm 19 x 4 = 76mm

2025-2055 = 8.5mm 30 x 8.5= 255mm

2055-2085 = 12mm 30 x 12 = 360mm

2085-2110 = 15mm 24 x 15 = 375mm

Therefore the 1 in 200 tidal levels for year 2110 = 6.93mODN.

The effect of global warming on fluvial flood peaks is given in Table B2. It is expected that the overall effect up to 2025 will result in an increase of rainfall of 5%, 2025-2055 10%, 2055-2085 20% and 2085-2115 of 30% with Peak River flows increasing by 10% and from 2085-2115 by 20%.

INFRASTRUCTURE

The property will be connected into a foul drainage system which will connect into an Anglian Water foul sewer in Common Way. The surface water from the development will be connected into the existing outlets or to soakaways designed in accordance with BRE Digest 365.

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

MORPHOLOGY

There are no environmentally sensitive aquatic features within the site boundaries therefore the development will have no effect upon either fluvial or coastal morphology.

CONCLUSION

- The site does have the benefit of protection from tidal flooding by the existing defences which are properly maintained to a 1 in 200 year standard of protection from tidal flooding both now and for the lifetime of the development.

- The site is shown on the Hazard maps produced by the Environment Agency not to lie within a Hazard Zone, following a breach to the River Nene defences, up to year 2115. It is also shown on the Extract from South Holland SFRA Actual Flood Depth 2115 Map not to be in a flood depth area.

- Whilst the site lies within the High Probability Zone 3a without defences as stated in PPS25. The proposed Residential Use falls within the More Vulnerable uses of land as defined in Table D2 PPS25, this development use is appropriate in this zone subject to passing the exception test.

- Floor levels for the development are to be set 150mm above ground level.

- Paragraph 4.42 of PPS25 Practice Guide; 2009 states that "PPS25 states in paragraph D15 that change of use should not be subject to the sequential and exception tests.

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

- The occupants of the properties will register their property with the Environment Agency to receive automated early warnings of potential flood events.

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APPENDIX

Photo 1	Existing Barns
Photo 2	Entrance to Tysdale Manor
Photo 3	North Level Drain Outfall into River Nene
Plan 1	Location Plan
Plan 2	Site Plan with OS Levels
Plan 3	Proposed Building Details
Map 1	Extract from Environment Agency Flood Zone Map
Map 2	Extract from Environment Agency Hazard Mapping 2006
Map 3	Extract from Environment Agency Hazard Mapping 2115
Map 4	Extract from South Holland SFRA Actual Peak Depth 2115 Map
Map 5	South Holland IDB Drainage Plan



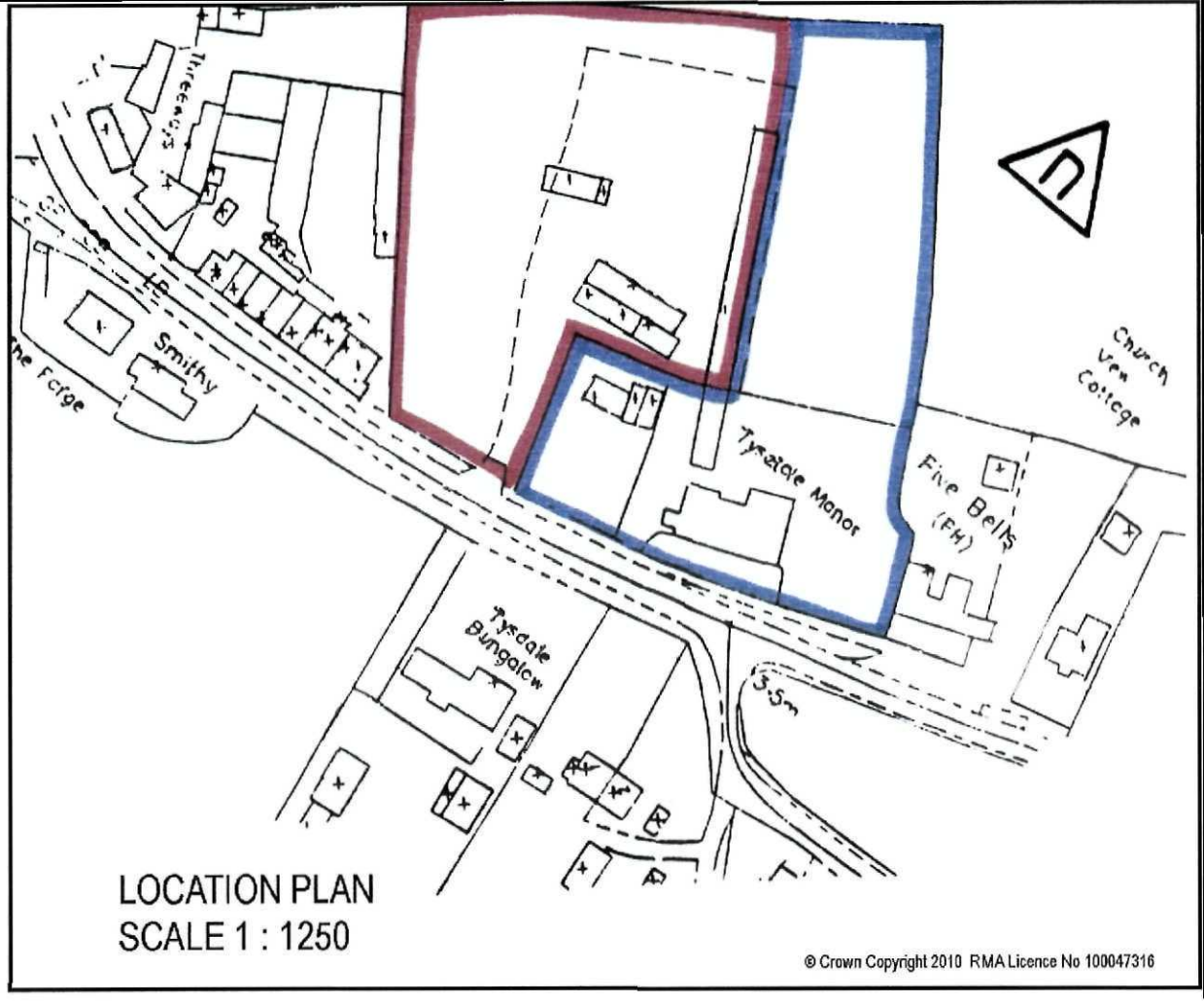
Photo1 Existing Barns



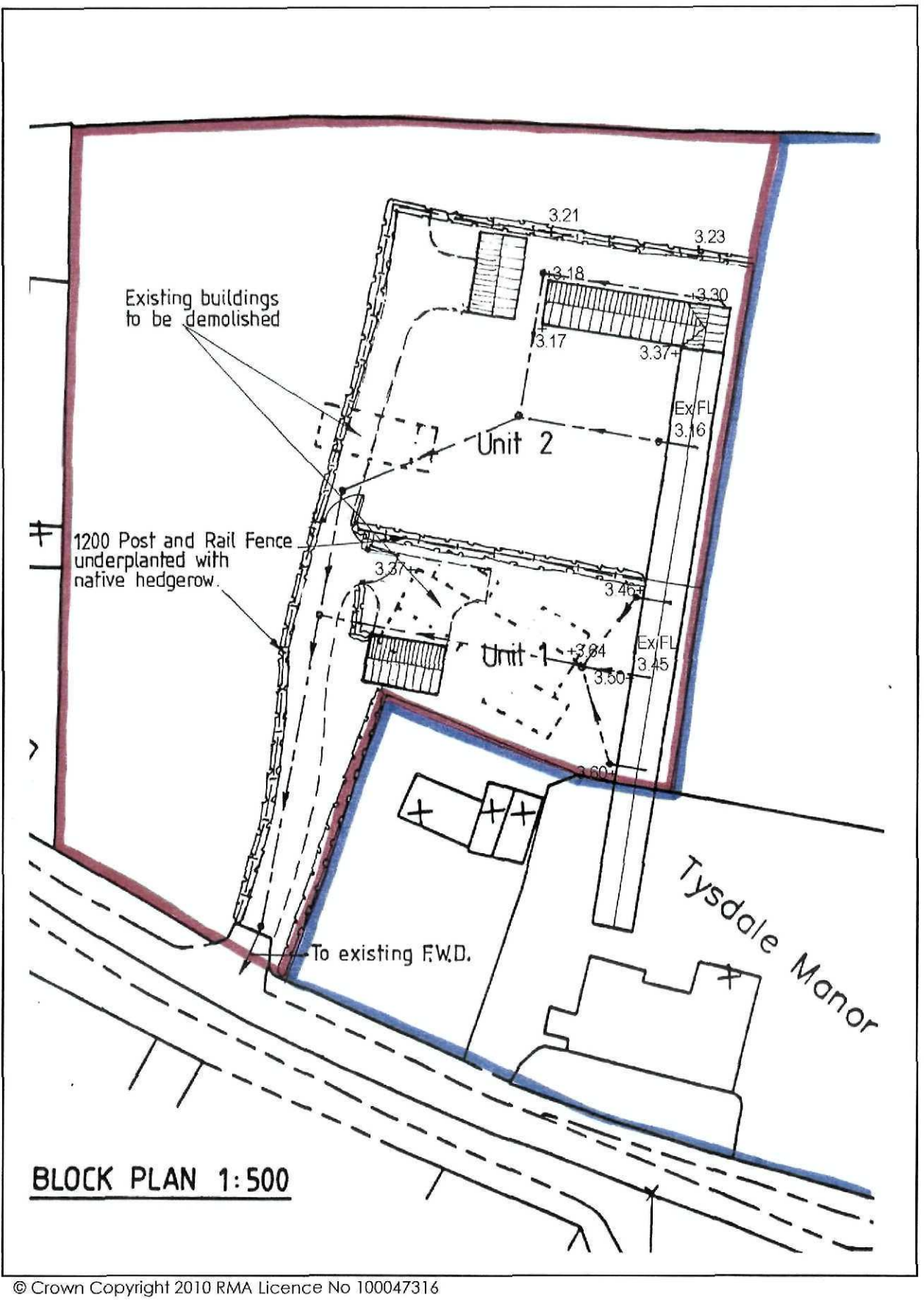
Photo2 Entrance to Tysdale Manor



Photo3 North Level Drain Outfall into River Nene


Threeways
Smithy
Tysdale Manor
Five Bells (PH)
Church View Cottage
Tysdale Bungalow
3.5m
LOCATION PLAN
SCALE 1 : 1250
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PLAN 1

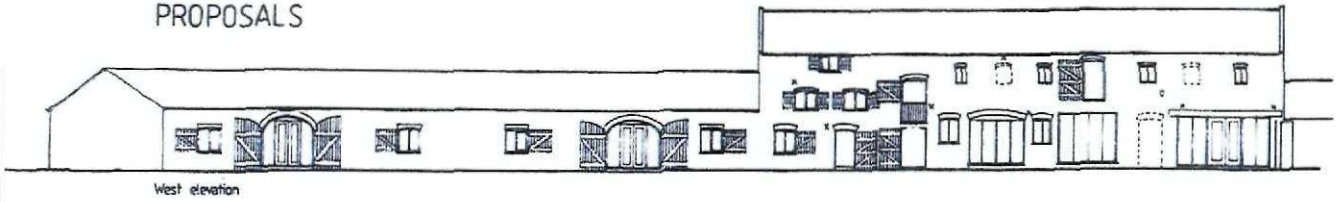


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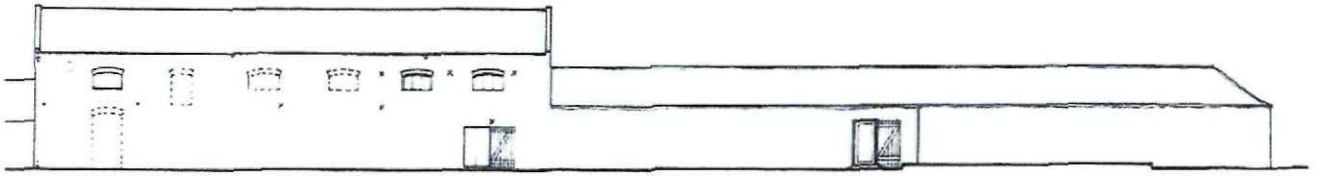
PLAN 2

PLAN 3

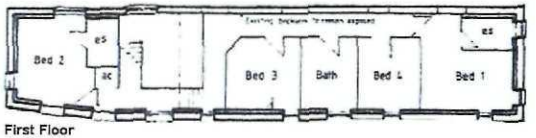
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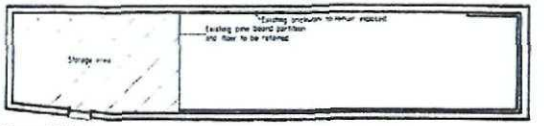
West elevation



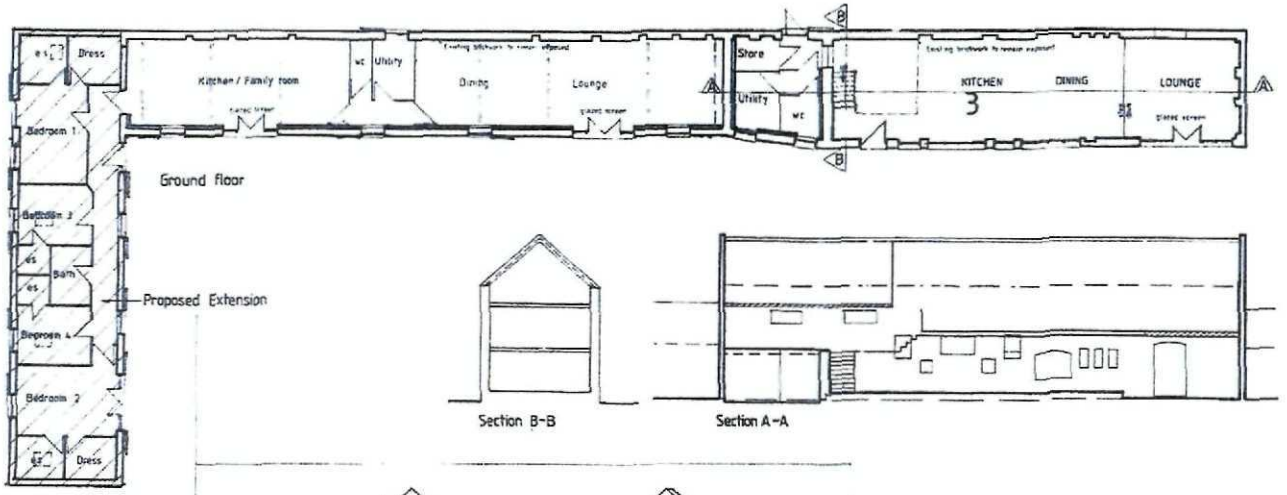
East elevation



First Floor



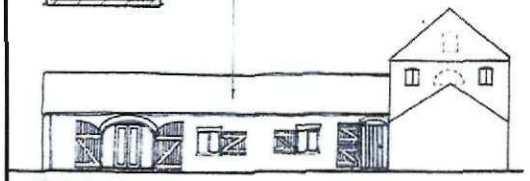
Second Floor



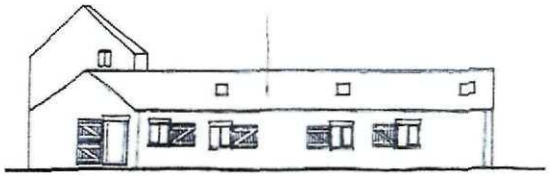
Ground floor

Section B-B

Section A-A



South elevation



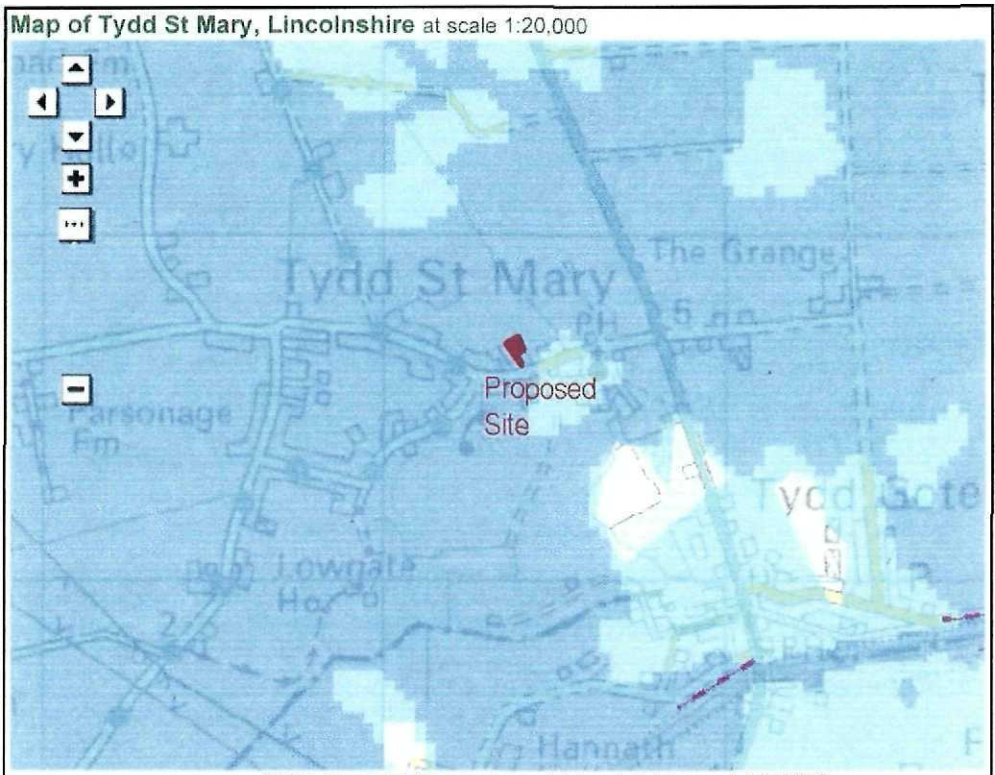
North elevation

Rev	By	Notes	Date
A	GJ	Foul drainage added	02/09/10

rdc
Robert Doughty Consultancy
39 High Street, Hedgingham, Sudbury, Lincolnshire, CO10 0NA
Tel 01787 471199
Fax 01787 471188
Email admin@rdc-hedgingham.co.uk
Web www.rdc-hedgingham.co.uk

Client	MR & MRS HENDY
Project	Tyndale House Barns
Drawing title	Conversion of Barns to Residential
Drawing No	812 / 02 / SK100
Rev	A
Drawn	GJ
Scale	1:100 1:500 1:1250
Date	18/06/2010
Checked	

EXTRACT FROM ENVIRONMENT AGENCY FLOOD MAP

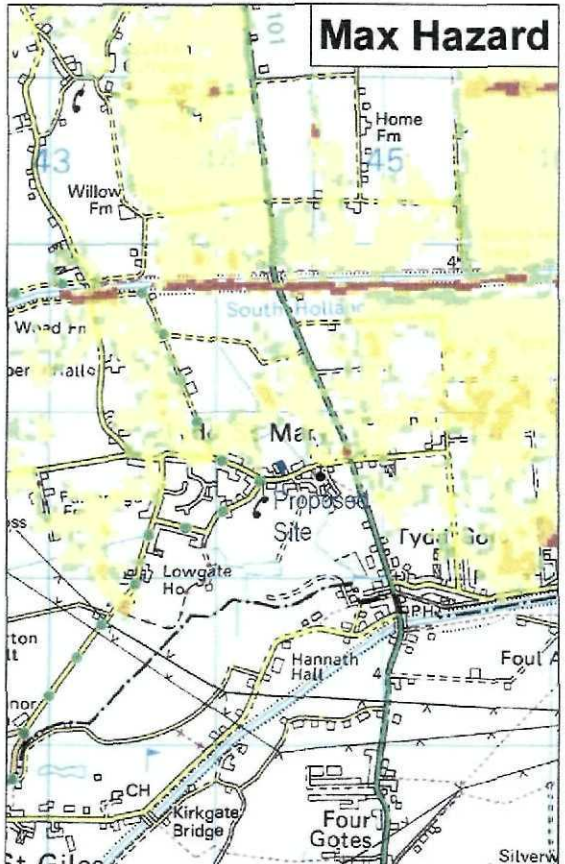


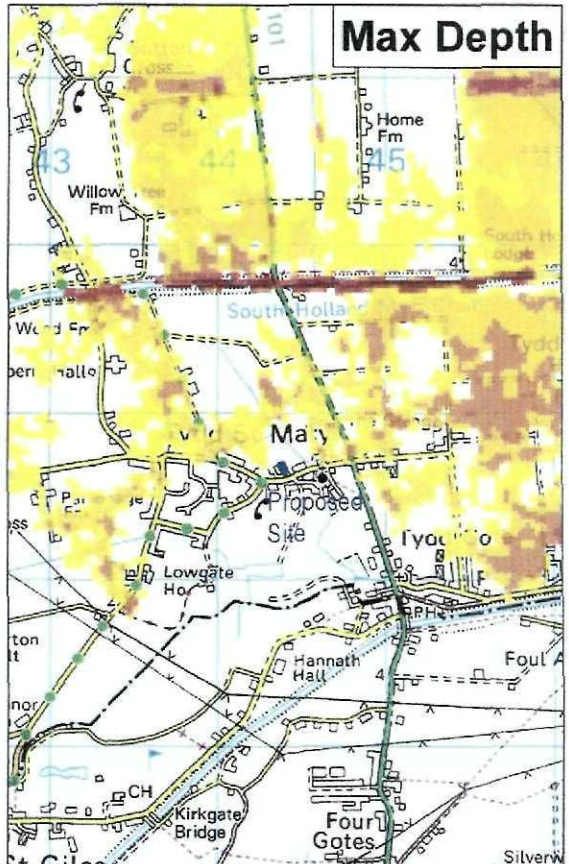
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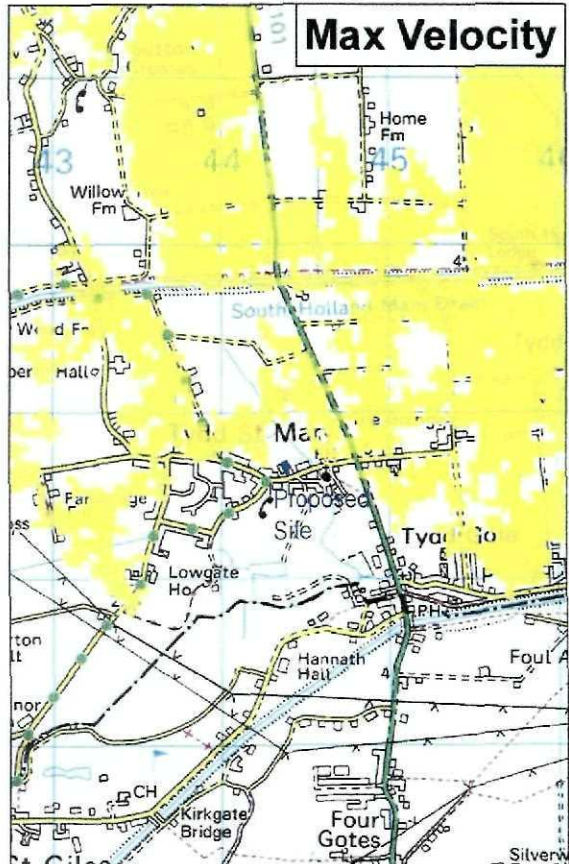
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MAP 2







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

Max Hazard (Flood Risk to People : FD2320)	Max Depth (m)	Max Velocity (m/s)
Less than 0.75 (Low Hazard)	0 - 0.25	0 - 0.3
Between 0.75 and 1.25 (Danger for Some)	0.25 - 0.50	0.3 - 1.0
Between 1.25 and 2.0 (Danger for Most)	0.50 - 1.0	1.0 - 1.5
Greater than 2.0 (Danger for All)	1.0 - 2.0	1.5 - 2.5
	2.0 +	2.5 +

Date Printed	November 2010	Scenario year	2006	Scenario	0.5% (1 in 200)

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 across the floodplain

The map is based on computer modelling of simulated breaches at intervals along the coastline and at certain points on Main Rivers. 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. Our defences generally provide a good standard of flood defence but a risk of breaching remains.

The map does not show the possible consequences of overtopping of the tidal defences, though overtopping of fluvial defences is included. Separate maps of the flood extent from just overtopping are available.

These hazard maps do not replace the flood zone maps used in Planning Policy Statement 25 (PPS25).

Please contact the Environment Agency for information on how these maps are used in the management of flood risk.

General Enquiries No 08708 506 506. Weekday daytime calls cost 8p plus up to 6ppm from BT Weekend Unlimited, Mobile and other providers charges may vary

Environment Agency

Produced by the Flood Risk Mapping & Data Management Team, Lincoln

Northern Area Tidal Hazard Mapping

Map Centered on TF 4440 1864

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MAP 3

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

Max Hazard (Flood Risk to People - FD2320)	Max Depth (m)	Max Velocity (m/s)
Less than 0.75 (Low Hazard)	0 - 0.25	0 - 0.3
Between 0.75 and 1.25 (Danger for Some)	0.25 - 0.50	0.3 - 1.0
Between 1.25 and 2.0 (Danger for Most)	0.50 - 1.0	1.0 - 1.5
Greater than 2.0 (Danger for All)	1.0 - 2.0	1.5 - 2.5
	2.0 +	2.5 +

Date Printed	November 2010	**Scenario year**	2115	**Scenario**	0.5% (1 in 200)

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 across the floodplain

The map is based on computer modelling of simulated breaches at intervals along the coastline and at certain points on Main Rivers. 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. Our defences generally provide a good standard of flood defence but a risk of breaching remains.

The map does not show the possible consequences of overtopping of the tidal defences, though overtopping of fluvial defences is included. Separate maps of the flood extent from just overtopping are available.

These hazard maps do not replace the flood zone maps used in Planning Policy Statement 25 (PPS25).

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Environment Agency

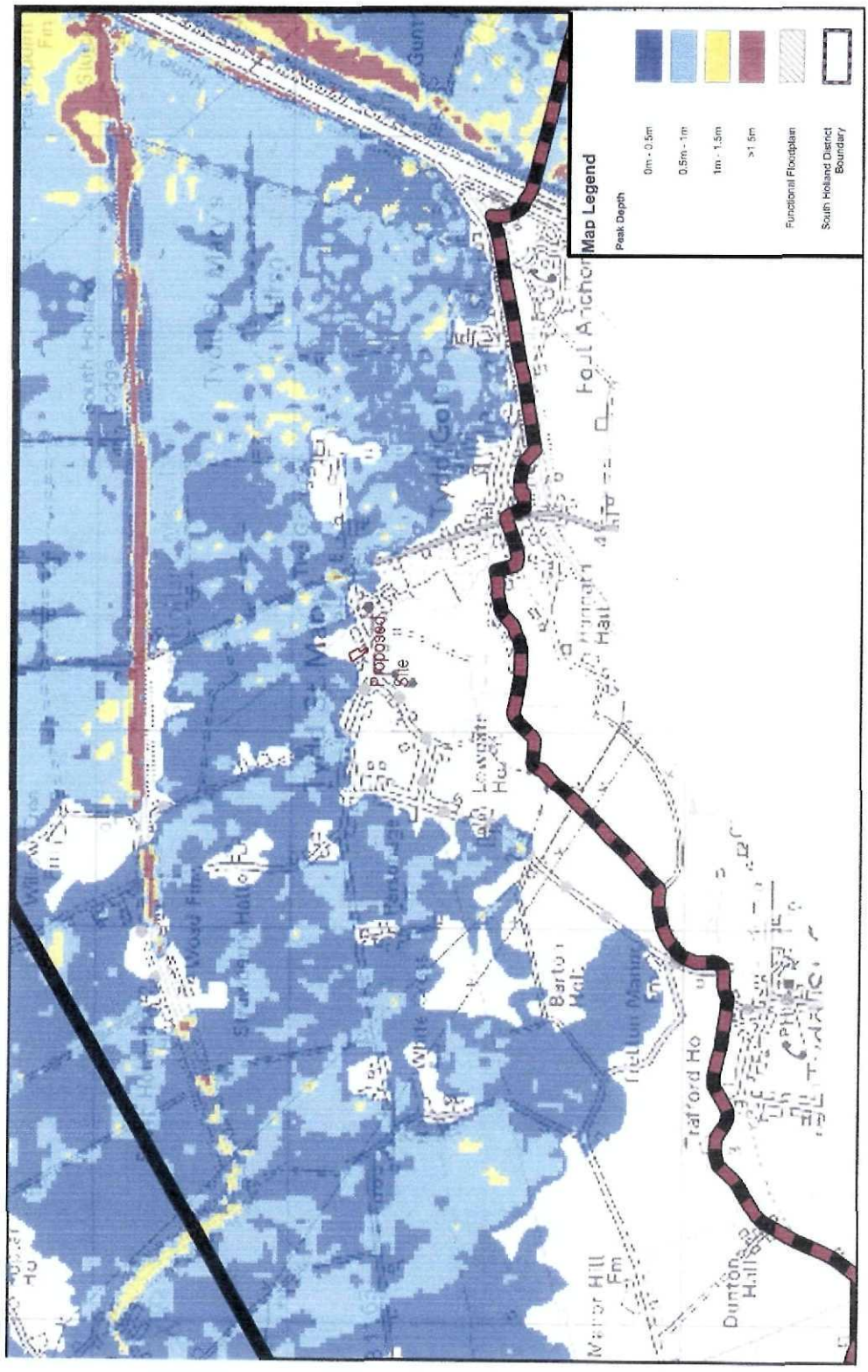
Produced by the Flood Risk Mapping & Data Management Team Lincoln

Northern Area Tidal Hazard Mapping

Map Centered on TF 4440 1864

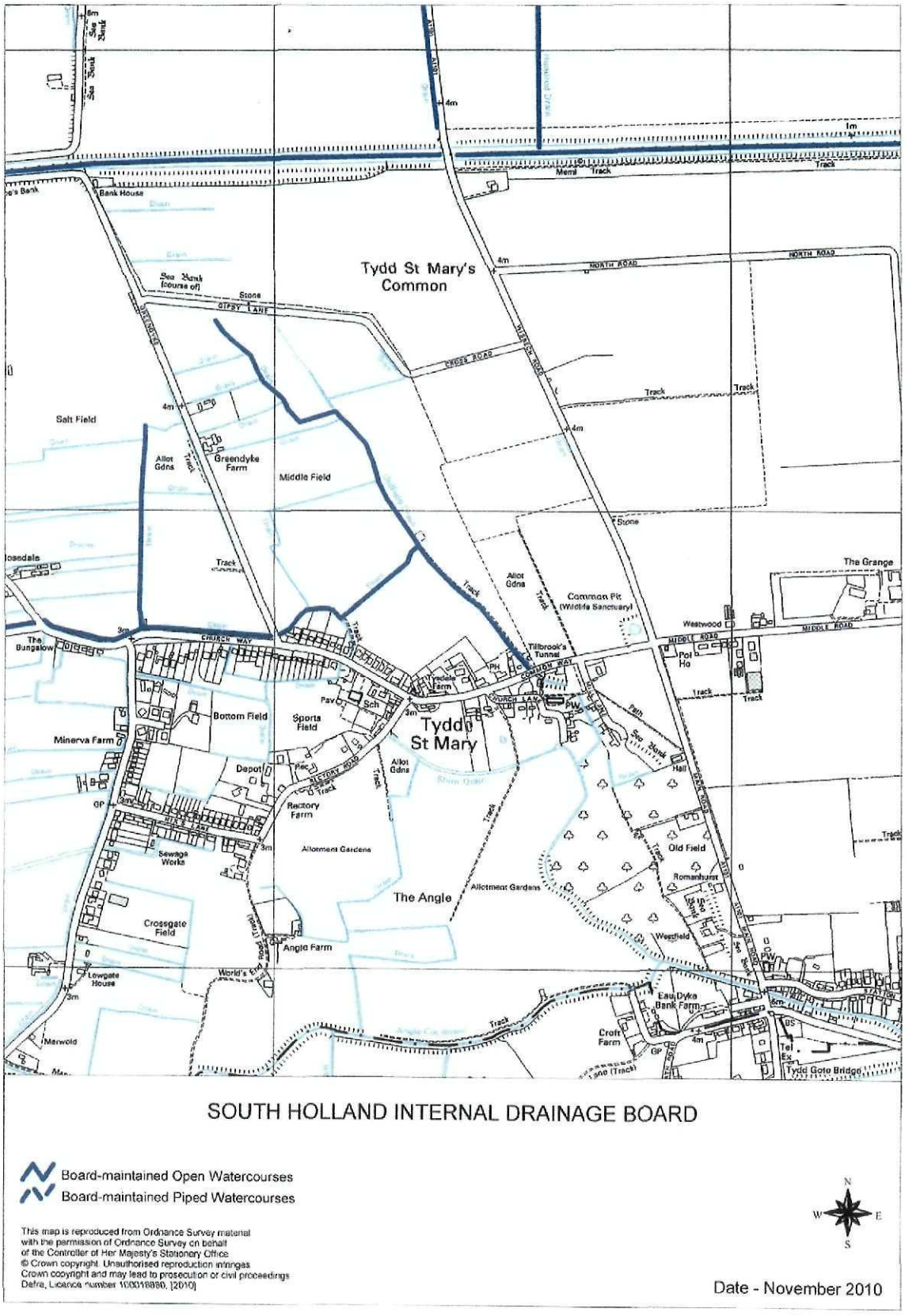
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Extract from South Holland SFRA Actual Flood Hazard 2115 Map



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MAP 4



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MAP 5