

**FLOOD RISK ASSESSMENT FOR
PROPOSED RESIDENTIAL DEVELOPMENT
AT MOULTON SEAS END,
SPALDING, LINCS**

FINAL REPORT

GEOFF BEEL CONSULTANCY

APRIL 2015

GCB/WRIGHT

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1.0 INTRODUCTION

- 1.1 A full planning application is to be submitted by Andrew M Wright Ltd on behalf of D&B Builders for proposed residential development at Seas End Road, Moulton Seas End, Spalding, Lincs.
- 1.2 A Flood Risk Assessment is required to accompany the planning application and meet the requirements and general principles contained in Paragraph 9 of the Technical Guidance to the National Planning Policy Framework NPPF and for approval by the Environment Agency.

The site, as situated, is located within Flood Zone 3 of the Environment Agency's Flood Zone Maps. The latest Agency Flood Maps have been created as a tool to raise awareness of flood risk with the public and our partner organisations, such as Local Authorities, Emergency Services and Drainage Authorities. The Maps do not take into account any flood defences.

The site is also shown in Flood Zone 3 of the South Holland District Council's Strategic Flood Risk Assessment Maps.

The site is also located in the South Holland IDB drainage district.

- 1.3 Geoff Beel Consultancy was appointed on 24th April 2015 to undertake a Flood Risk Assessment.
- 1.4 A previous Flood Risk Assessment by the author was approved by the Environment Agency as part of planning approval ref: H13-0618-10 dated November 2010.

2.0 LOCATION

- 2.1 The development site is located north east of Seas End Road, Moulton Seas End. The National Grid Reference of the central point of the development is TF 31632590.
- 2.2 The position and extent of the site is shown on Fig 1 – Existing and Proposed Location Plan at the end of the document.
- 2.3 The site, located within the South Holland Internal Drainage Board district is shown within Flood Zone 3 as detailed on both the Environment Agency Flood Zone Map and the Council's Strategic Flood Risk Assessment Map.

3.0 THE SITE AND SEQUENTIAL TEST

- 3.1 The site is currently a partially built holiday let accommodation of previous planning approvals.
- 3.2 The area of development is approximately 0.49 hectare.

- 3.3 The proposed site layout consists the conversion of existing holiday let accommodation to a single residential dwelling. Existing land and floor levels vary between 2.96m and 3.56m aOD.
- 3.4 The Sequential Test and Exception Test will require to be applied by the Local Planning Authority but the development may be permitted as the site is protected against both the 1 in 200 year return period tidal event and the 1 in 100 year return period fluvial event and has previous planning approval ref: H13-0618-10 of November 2010.

4.0 EXISTING FLOOD ALLEVIATION MEASURES

- 4.1 The site is within a defended floodplain, as defined in Appendix 1 of the Environment Agency's 'Policy for the Protection of Floodplains' and is considered to be passive until such time as a flood greater than that for which the defences were designed occurs. The likelihood of flooding due to overtopping or failure of a flood defence embankment is considered to be small.

The development site within the South Holland Internal Drainage Board is protected by the River Welland tidal defences between Spalding and Fosdyke Bridge with embankment levels of a minimum of 7.00m aOD.

- 4.2 The site and the surrounding land drains by gravity to Board drains to the west of the site and hence to the Lords Sluice Outfall and hence to the tidal River Welland.
- 4.3 The existing standard of drainage for the South Holland Internal Drainage Board is 1 in 50 years return period, compatible with the Department of the Environment, Food and Rural Affairs target level of service for rural drainage and flood defence works. Freeboard of 900mm is provided to the lowest land levels.
- 4.4 Current maintenance standards within the South Holland Internal Drainage Board and of the Environment Agency defences are generally very good.

During the operation and maintenance of its pumping stations, associated structures and channel systems, particularly those that could affect property, the Board seeks to maintain a general standard capable of providing flood protection to its district. A routine maintenance programme is in place to ensure that the Boards assets are commensurate with the standard of protection that is sought. However, bank slips, blocked culverts etc may occur from time to time and these matters are usually dealt with promptly.

5.0 POTENTIAL SOURCES OF FLOODING

5.1 Four potential sources of flooding have been identified as a result of this assessment:

- a) local blockages to soakaways
- b) local blockages to IDB main drain system.
- c) storm return period of 1 in 50 years being exceeded
- d) overtopping and breaching of defences of the tidal River Welland

5.2 The probability of flooding from source a) is low due to the maintenance standards by the future owner and the design requirements of BRE36.

The probability of flooding from b) is also low due to the South Holland IDB main drain design standard incorporating a minimum 900mm freeboard to the lowest land level which provides adequate storage in events greater than 1 in 50 years.

Previous historic rainfall events of 1968 and 1978, estimated to be greater than 1 in 100 year events, caused no flooding to any residential properties at the time and the Boards policy is to provide a standard of drainage which satisfies NPPF requirements of a 1 in 100 year return period for fluvial protection inclusive of the effects of climate change and developments to the arterial system enables a flexible approach to be adopted and meet the criteria for “sustainable urban drainage”.

5.3 The flood embankments to the tidal River Welland provide a 1 in 200 year return period level of protection.

The 1 in 200 year River Welland tidal event at Fosdyke Bridge in 2069 is estimated to be 6.41m aOD as against existing embankment levels of a minimum of 7.00m aOD.

There is a low risk during such an event for wave and wind action to cause overtopping and/or breaching of the first line defences parallel with the River Welland. However, the site is located 4.5kms from the River Welland defences and any overtopping/breaching would be minimal.

The Environment Agency has confirmed that the Tidal hazard mapping shows that flood depths of up to 250mm would affect the site as a consequence of a breach occurring to the River Welland tidal defences.

The Agency require the following mitigation measures to be incorporated into the development:

For areas where flood depths are 0 – 0.25m.

Finished floor levels should be set a minimum of 300mm above ground level.

The development site is protected by land levels varying between 2.96m and 3.56m aOD which are well above surrounding land levels between the site and the river defences.

5.4 Surface water drainage from the development site will be to soakaways to BRE365 design requirements and Building Regulations approval.

6.0 EXTENT OF KNOWN FLOODING

- 6.1 During the preparation of this assessment, no evidence was discovered of the site being flooded or of any adjoining properties.

7.0 PROBABILITIES AND TRENDS OF FLOODING

- 7.1 The probability of this development flooding from localised drainage systems is very low.
- 7.2 The probability of the site flooding with water from any South Holland IDB main drain is less than 1% because of the standards of the existing flood defence systems, storage within existing drainage channels and the location of the site.
- 7.3 The probability of the site flooding with tidal waters from any main river system is less than 1% because of the standards of the existing flood defences and the location of the site.
- 7.4 If under very extreme events, levels of floodwater from the South Holland IDB main drains or arterial systems rose to such an extent that the site was affected, the situation would not be sudden. It is very probable that sufficient time would be available to take precautionary actions to limit the extent and potential impact of flooding.
- 7.5 The water levels in the drainage channels will tend to rise as a result of the impacts of climate change. However the existing systems and defences together with the proposed floor levels 300mm above existing surrounding ground level will be appropriate for the design life of the development (i.e. 100 years).
- 7.6 Safe access and egress is readily available onto Seas End Road and hence in a generally southerly direction to the A151 road and the town of Holbeach.

8.0 IMPACTS OF FLOODING

- 8.1 No significant impacts of flooding are anticipated.
- 8.2 Floor levels of the development will be at 3.56m aOD and at least 300mm above existing surrounding ground levels which together with the proposed sustainable drainage system will offer additional protection against impacts arising from any extreme short duration, localised events.
- 8.3 The general location of the site within the catchment is such that if flooding occurred from any of the South Holland IDB main drain systems, then probably 2 to 3 days warning time would be available.
- 8.4 No displacement of water from the site will affect any adjoining properties as existing soakaway drainage system will be utilised.

9.0 RESIDUAL RISK – EXTREME EVENTS

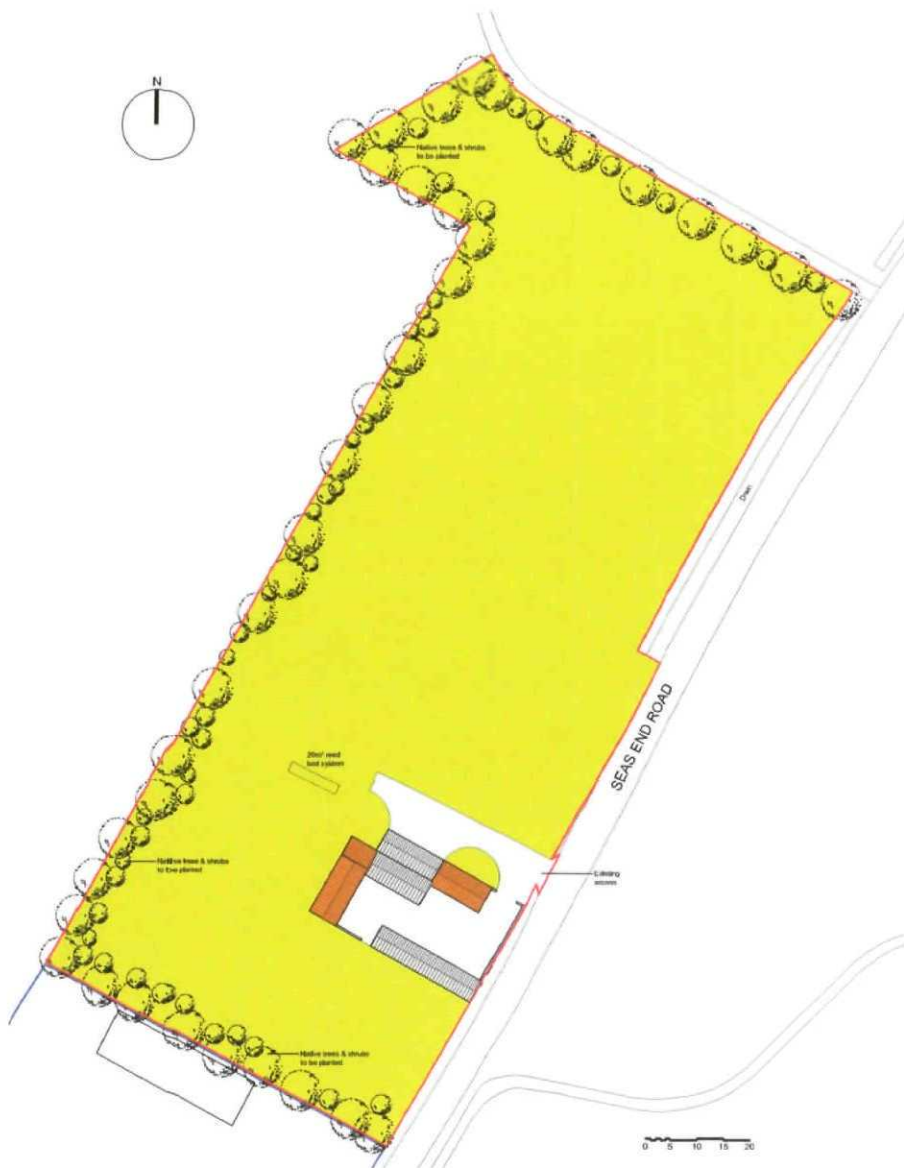
- 9.1 The residual risk from extreme events is very low on this site, because of its location, within the South Holland IDB area and its location 4.5kms from the River Welland tidal defences.
- 9.2 Although within Flood Zone 3 according to NPPF classification, the site actually has a very low risk of flooding due to the current standards of drainage and flood defence and land levels. The site is not located within a Functional Flood Plain of any 'main river' or 'main drain'. The Environment Agency Flood Zone Maps have been produced irrespective of existing flood defences and standards of protection.
- 9.3 South Holland District Council in conjunction with the Environment Agency and the local IDB's within the Council area have carried out a Strategic Flood Risk Assessment of the whole District by appointed Consulting Engineers.

The Strategic Flood Risk Assessment has produced more definitive Flood Risk Maps than those published by the Environment Agency and at the same time has analysed flood return periods of all tidal and fluvial defences to account for the effects of climate change.

Breach scenarios of embankments failing and/or being overtopped have also been carried out to establish Flood Risk Zones. As a result of the Strategic Flood Risk Assessment for the site is outside any Rapid Inundation Zone and defended by tidal defences and tidal doors.

10.0 CONCLUSIONS AND RECOMMENDATIONS

- 10.1 As a result of the assessment, the following conclusions have been reached:-
- The proposed development is not in a Functional Floodplain. It is located in the Passive Floodplain protected by River Welland tidal defences to a 1 in 200 year return period, (1.0%)
 - Although the site is in Flood Zone 3, the actual risk of site flooding from any Environment Agency river system is very low (less than 0.5%).
 - Although the site is located within an Internal Drainage District with a minimum standard of drainage of 1 in 50 years, this accords with Defra guidelines for rural development. Freeboard to design water level of 900mm to lowest land level is available for events greater than 1 in 50 years providing further storage within the drainage channels.
 - On site rainwater from the development will be discharged to proposed soakaway drainage to BRE365 design requirements and Building Regulations approval.

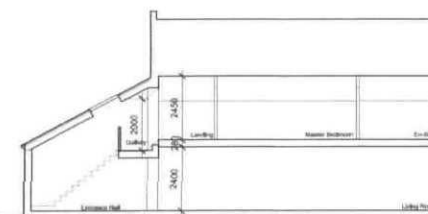


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ANDREW H WRIGHT LTD
CONTRACTORS



Project	Barns Seas End Road Spalding Lincs
Drawing No	Location Plan & Block Plans
Client	D Brown Building Contractors Ltd
Drawn	AMW
Checked	AMW
Date	05.02.15
Scale	As shown
Sheet	A1
Ref No	061301
Proj No	PD103
Stage	Planning
Revision	P1



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

Report any discrepancies to the Contract Administrator at once.

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

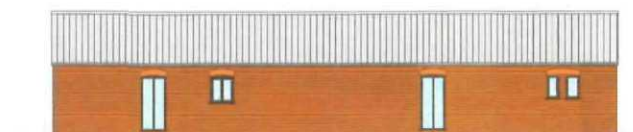
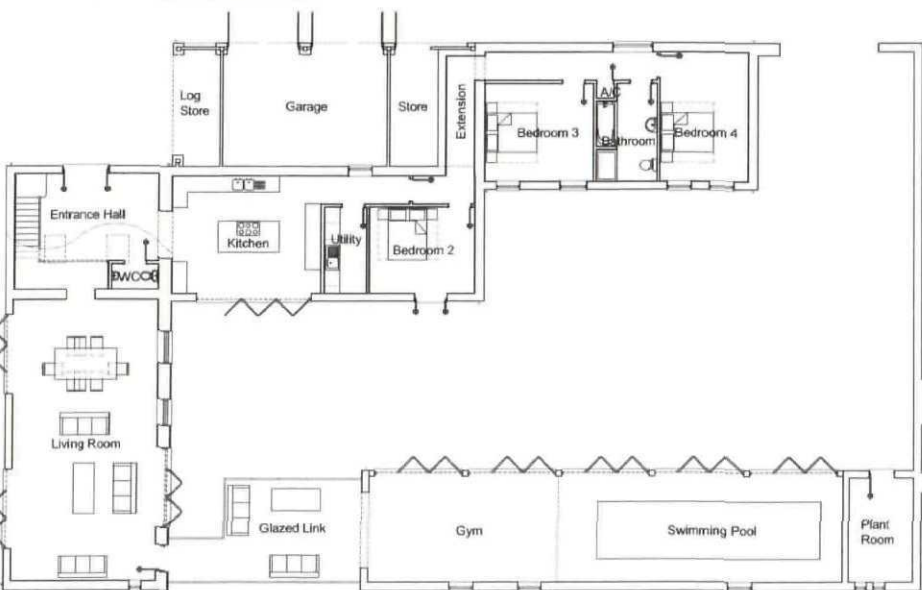
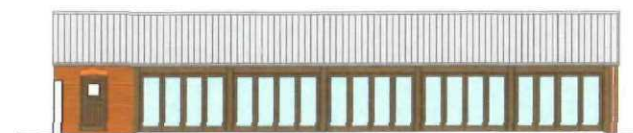
Andrew & Wright Ltd, Gloucestershire in England & Wales No. 10396042.
Registered office: 22 Church Street, Huddersfield, Yorkshire, HD1 1TS, UK

LEGEND: DO NOT SCALE

Materials are all as per those approved under planning permission 1003/0004/03.

The following additions apply to the proposals shown on this drawing:-

Conservatory - structural glazing



Elevations of Gym/Pool Barn

ID	IP Address	Device Name	Device Type
101	192.168.1.101	Desktop	PC
102	192.168.1.102	Desktop	PC
103	192.168.1.103	Desktop	PC
104	192.168.1.104	Desktop	PC
105	192.168.1.105	Desktop	PC
106	192.168.1.106	Desktop	PC
107	192.168.1.107	Desktop	PC
108	192.168.1.108	Desktop	PC
109	192.168.1.109	Desktop	PC
110	192.168.1.110	Desktop	PC

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FOURTEEN ALPHABETIC



Project:
Barns
Seas End Road
Spalding
Lines

Drawing Title:

Proposed Plans, Elevations & Sections

D Brown Building Contractors Ltd

Project:	Character:	Date:	Scale:	Project ID:
AMW	AMW	05.02.15	1:100	A1
Job No.:	Design No.:	Design:		Position:
061301	PD102	Planning		P1

All dimensions to be verified on site by Main Contractor before the start of any work. Drawings or work shall remain valid on that date and shall not be used for other purposes.
 These drawings are to be used for the construction of the building and are not to be used for any other purpose.
 This drawing is to be used for the construction of the building and is not to be used for any other purpose.
 Andrew M Wright Ltd, Registered in England & Wales No. 1088544
 Registered Office: 27 Church Street, Highworth, Spalding, Lincs, PE11 7JL

LEGEND: DO NOT SCALE

Materials:-

Materials are all as per those approved under planning permission H13-0058-14.



North East Elevation (1:100)

North West Elevation

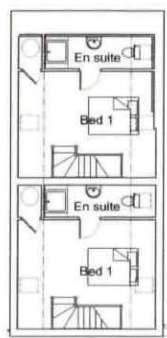


South West Elevation

South East Elevation



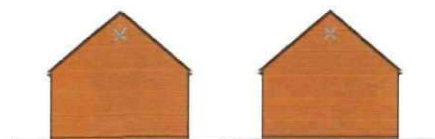
Ground Floor Plan (1:100)



First Floor Plan (1:100)

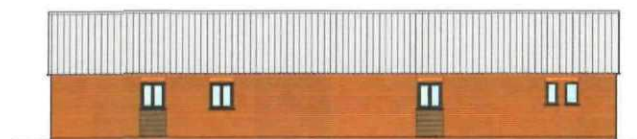


North East Elevation (1:100)



North West Elevation

South East Elevation



South West Elevation

Elevations of Units 5 & 6 Barn



1:1	1:100	1:1000	1:10000
1:1	1:100	1:1000	1:10000
1:1	1:100	1:1000	1:10000
1:1	1:100	1:1000	1:10000

ANDREW M WRIGHT LTD
 CHARTERED ARCHITECT



Project: Barns
 Seas End Road
 Spalding
 Lincs

Drawing Title: Plans & Elevations (Holiday Lets)
 (planning permission H13-0058-14)

Client: D Brown Building Contractors Ltd

Drawn	Checked	Date	Scale	Page No.
AMW	AMW	05.02.15	1:100	A1
Job No.	Proj No.	Stage	Revision	
061301	PD101	Planning		P1



Enter a postcode or place name:

Moulton Seas End, Lincolnshire

Go

Other topics for this area...

Flood Map for Planning (Rivers and Sea)

Flood Map for Planning (Rivers and Sea)

Map legend

X: 531,574;Y: 325,648 at scale 1:10,000

[Other maps](#)

[Data search](#)

[Text only version](#)

Click on the map to see what Flood Zone (National Planning Policy Guidance definitions) the proposed development is in.

☒ Flood Map for Planning (Rivers and Sea)

Flood Zone 3

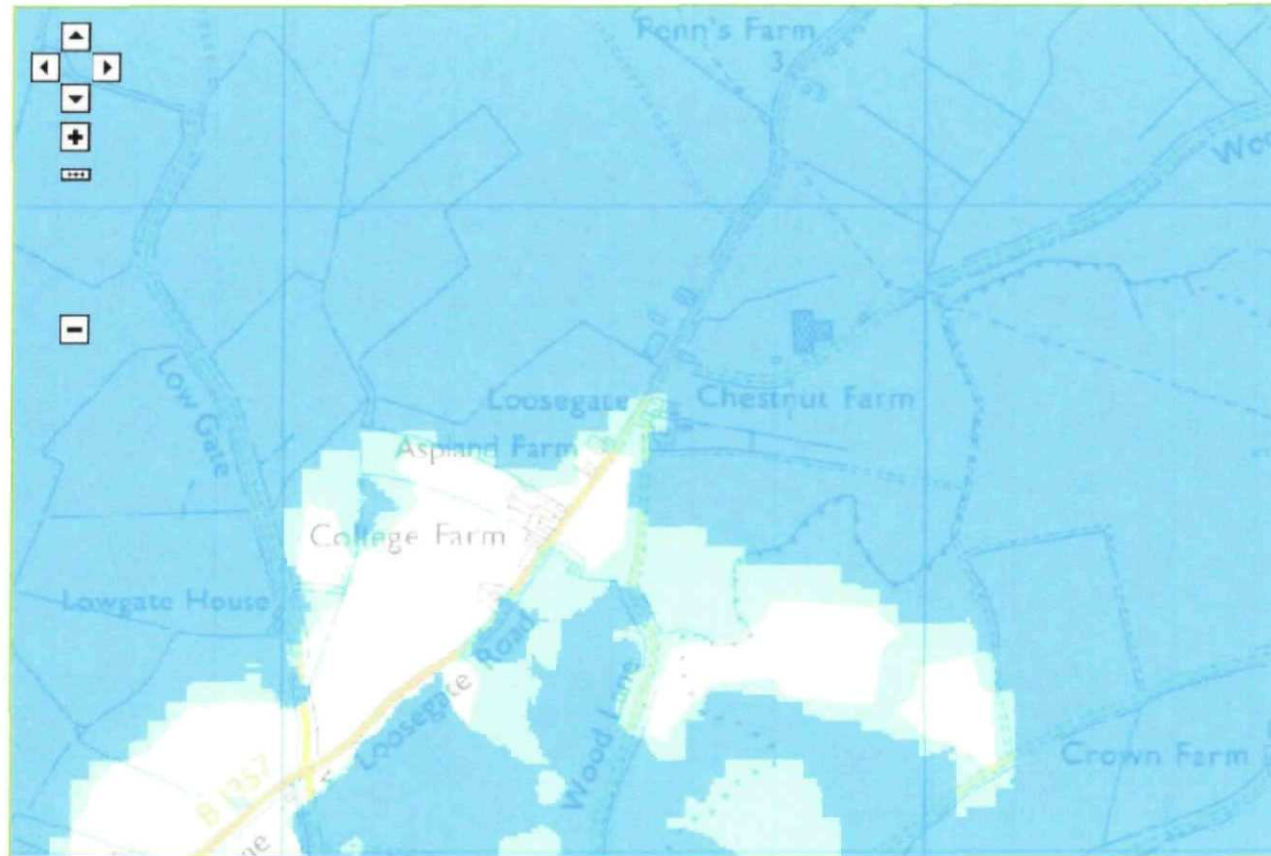
Flood Zone 2

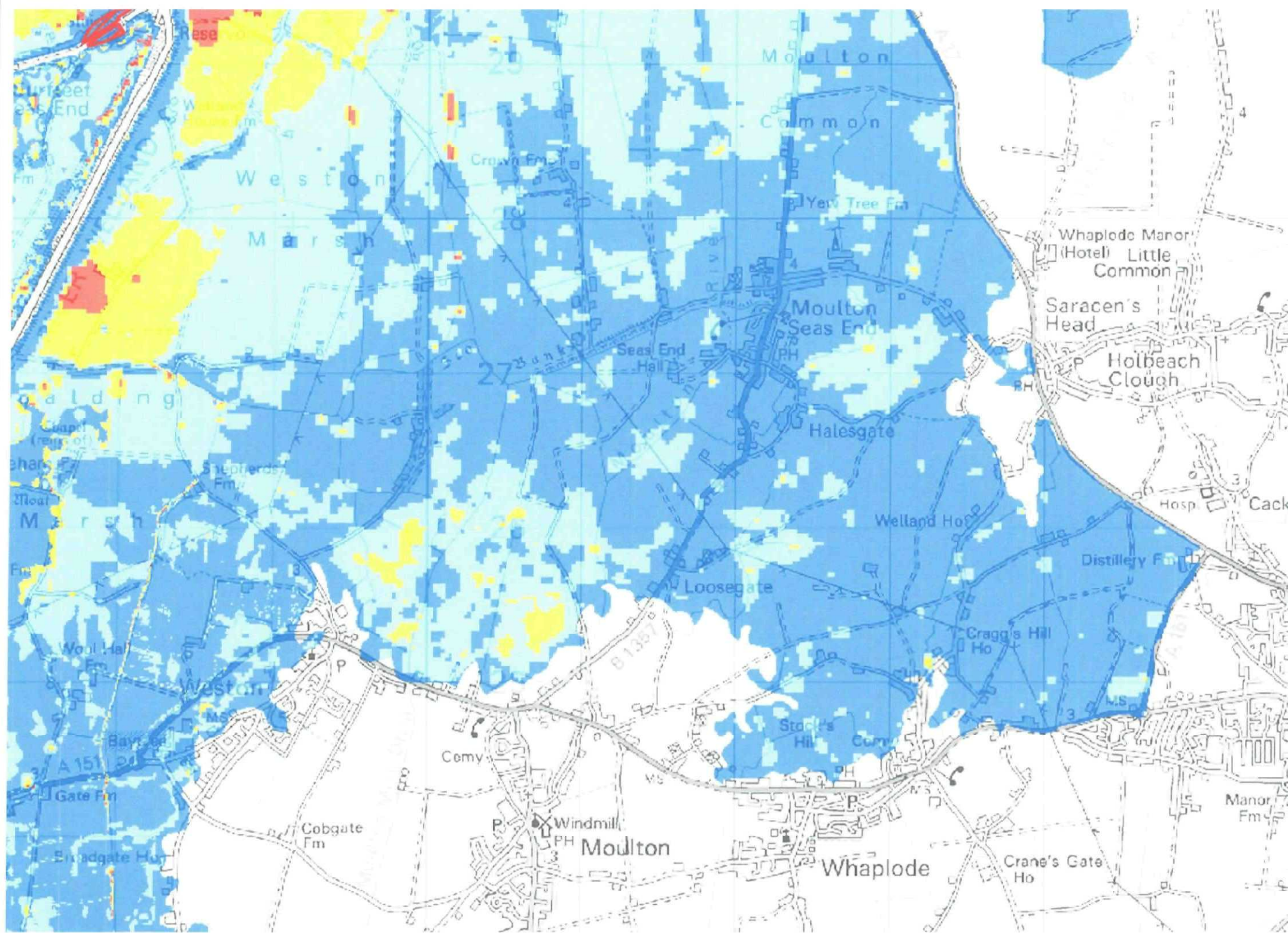
Flood defences (Not all may be shown*)

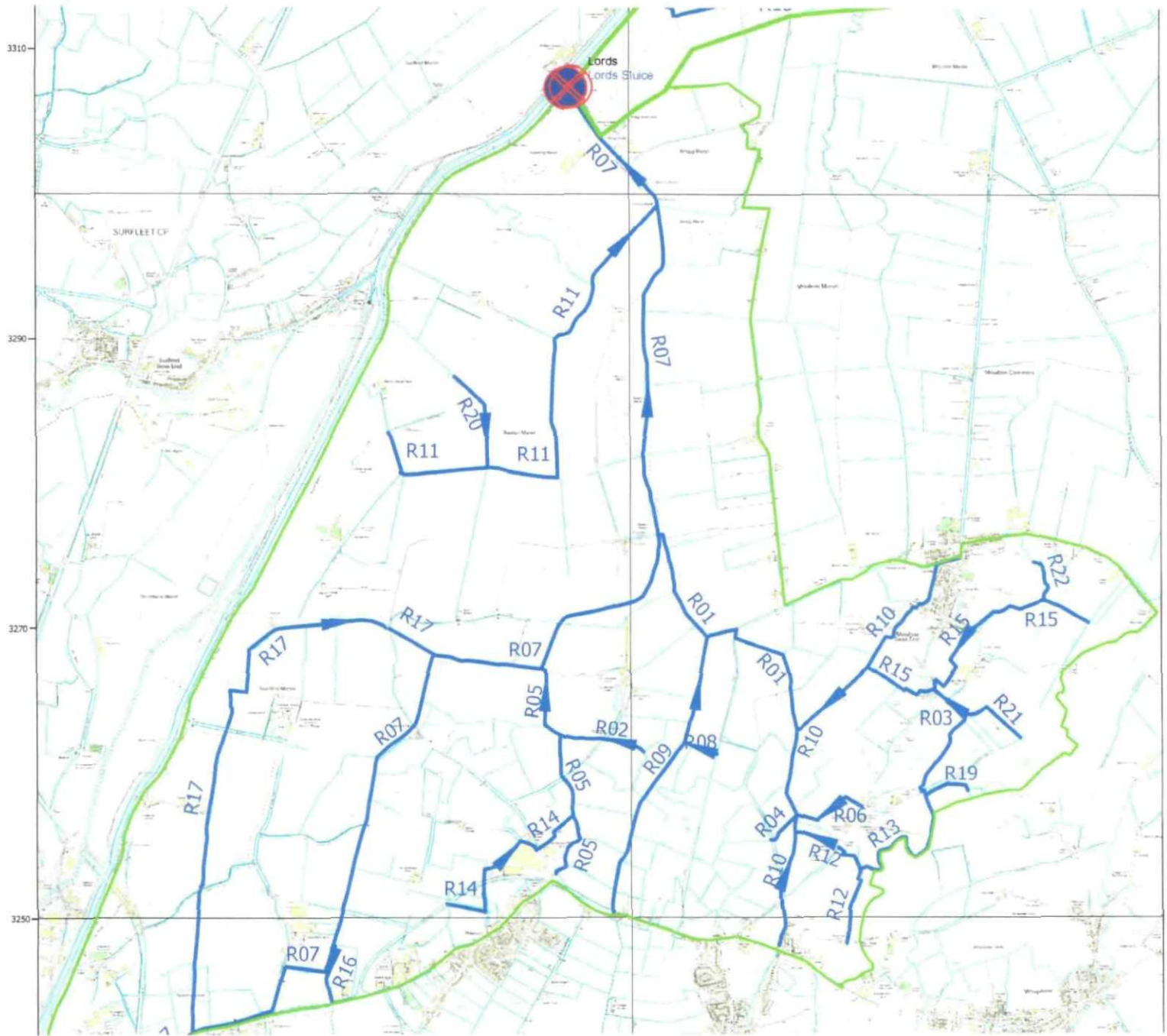
Areas benefiting from flood defences (Not all may be shown*)

☒ Main Rivers

River line









Geoff Beel
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Chartered Water & Environmental Manager

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email: geoff.beel@tiscali.co.uk

Sustainable Places Team
Environment Agency
Waterside House
Waterside North
Lincoln LN2 5HA

Our ref: GCB/Wright
Your ref: AN/2015/121456

27th April 2015

for the attention of Rob Millbank

Dear Rob

**Change of Use of 6 Holiday Lets to 1 single dwelling
at Seas End Road, Moulton Seas End, Spalding, Lincs.**

I refer to your letter of objection dated 22nd April addressed to South Holland District Council.

Please find attached copy of Flood Risk Assessment for the site which has also been forwarded to Local Planning Authority that formal re-consultation may take place.

Yours sincerely

Geoff Beel

cc SHDC - David Gedney
D Brown Builders