

**FLOOD RISK ASSESSMENT FOR
PROPOSED RESIDENTIAL DEVELOPMENT
AT BULL HOTEL, LONG SUTTON, Lincs**

		carter design group	
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**DETERMINED
PLAN**

FINAL REPORT

GEOFF BEEL CONSULTANCY

APRIL 2005

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1.0 INTRODUCTION

- 1.1 A full planning application is to be submitted by Carter Design Group on behalf of Korvin Developments Ltd for proposed residential development at the Bull Hotel, Long Sutton, Lincs.
- 1.2 Although the site falls within the low risk category as detailed in the Councils Strategic Flood Risk Assessment, the Planning Authority has drawn attention to paragraph 62 of Planning Policy Guidance Note 25 'Development and Flood Risk'. This makes reference to the types of application which require particular consideration of flood risk issues, namely those 'of such a size or nature relative to the receiving watercourse/drainage system that there could be a significant increase in surface water run-off from the area. As the Bull Hotel site is approximately 0.7 hectare in area it is the Planning Authoritys opinion that a Flood Risk Assessment should accompany the planning application.
- 1.3 Geoff Beel Consultancy was appointed on 23rd February 2005 to undertake a Flood Risk Assessment.

2.0 LOCATION

- 2.1 The development site is at the Bull Hotel, Long Sutton. The National Grid Reference of the central point of the development is TF 43102295.
- 2.2 The position and extent of the site is shown on Fig 1 – Location Plan at the end of the document.
- 2.3 The site, located within the South Holland Internal Drainage Board district is shown within the indicative flood risk area as detailed on the Environment Agency 2004 Flood Risk Maps – see Fig 3.

3.0 THE SITE

- 3.1 The site is currently a brownfield site.
- 3.2 The area of development is approximately 0.70 hectare.
- 3.3 The proposed site layout consists of an area of land, south and west of the Bull Hotel with access from Bull Lane and West Street, Long Sutton.

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 South Holland Internal Drainage Board is protected by a combination of the River Welland tidal defences downstream of Spalding, the River Welland fluvial embankments as well as the River Nene tidal defences downstream of Foul Anchor.

- 4.2 Long Sutton and the surrounding land drains by gravity by two possible routes along the Board's drains to the South Holland Main Drain and hence to the tidal River Nene at Sutton Bridge – see Fig 5.
- 4.3 The existing standard of drainage for the South Holland Internal Drainage Board is 1 in 25 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.

The South Holland Main Drain discharges to the tidal River Nene some 10kms downstream from the development site.

- 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 Board's 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 Three potential sources of flooding have been identified as a result of this assessment:
- a) local blockages to existing riparian drains and IDB main drain system.
 - b) storm return period of 1 in 25 years being exceeded
 - c) overtopping and breaching of defences of the fluvial River Welland, tidal River Welland and tidal River Nene

- 5.2 The probability of flooding from source a) is low due to the maintenance standards already achieved and managed by landowners and the IDB.

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 25 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 PPG25 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 fluvial River Welland provide a 1 in 100 year return period level of protection in combination with the Crowland and Cowbit Washes. The flood embankments to the tidal River Welland and tidal River Nene provide a 1 in 200 year return period level of protection.

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 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 fluvial 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 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 raising of floor levels above existing ground level will be appropriate for the design life of the development (ie 50 years).

8.0 IMPACTS OF FLOODING

- 8.1 No significant impacts of flooding are anticipated.
- 8.2 Floor levels of the development will be above existing ground levels offering 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 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. It is intended to utilise the routes of existing surface water sewers in the locality of the development – see Fig 2 – to discharge into the Falls Drain, a South Holland IDB main drain. Negotiations with Anglian Water Services Ltd will determine the flow rates of any proposed surface water discharge.

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 10kms from the River Nene tidal defences.
- 9.2 Although within Flood Zone 3 according to PPG25 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' as defined in para 23 of PPG25. The Environment Agency Flood Risk 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 for years 2002 and 2052 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.

- 9.4 As a result of the Strategic Flood Risk Assessment the South Holland Main Drain has been determined as providing protection against a 1 in 100 year return period event both in years 2002 and 2052.
- 9.5 The development site has been identified outside of any Flood Risk Zone from the South Holland Main Drain or the River Welland or the River Nene – see Fig 4.

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 as defined by PPG25. It is located in the Passive Floodplain protected by defences to a 1 in 100 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 25 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 25 years providing further storage within the drainage channels.
- On site property surface water drainage will be discharged via existing public surface water sewers after negotiations with Anglian Water Services Ltd and hence to South Holland IDB main drain.



LOCATION PLAN

NOTES

All workmanship is to be in accordance with the latest amendment of the relevant section of BS 8000, to the extent that recommendations define quality of finished work.
All materials are to be installed and fixed in strict accordance with the Manufacturers' Instructions, with the requirements of the relevant British Board of Agreement Certificate, the relevant British Standard applicable to that material and the section of BS 8000 applicable to that trade.

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project
The Bull Hotel, Long Sutton
for Korvin Developments Ltd

drawing title
Location Plan

scale 1:2500 @ A4
drawn by LNA
date March 2005

drawing no

checked by
date



FS 14501



CHARTERED ARCHITECTS
STRUCTURAL ENGINEERS

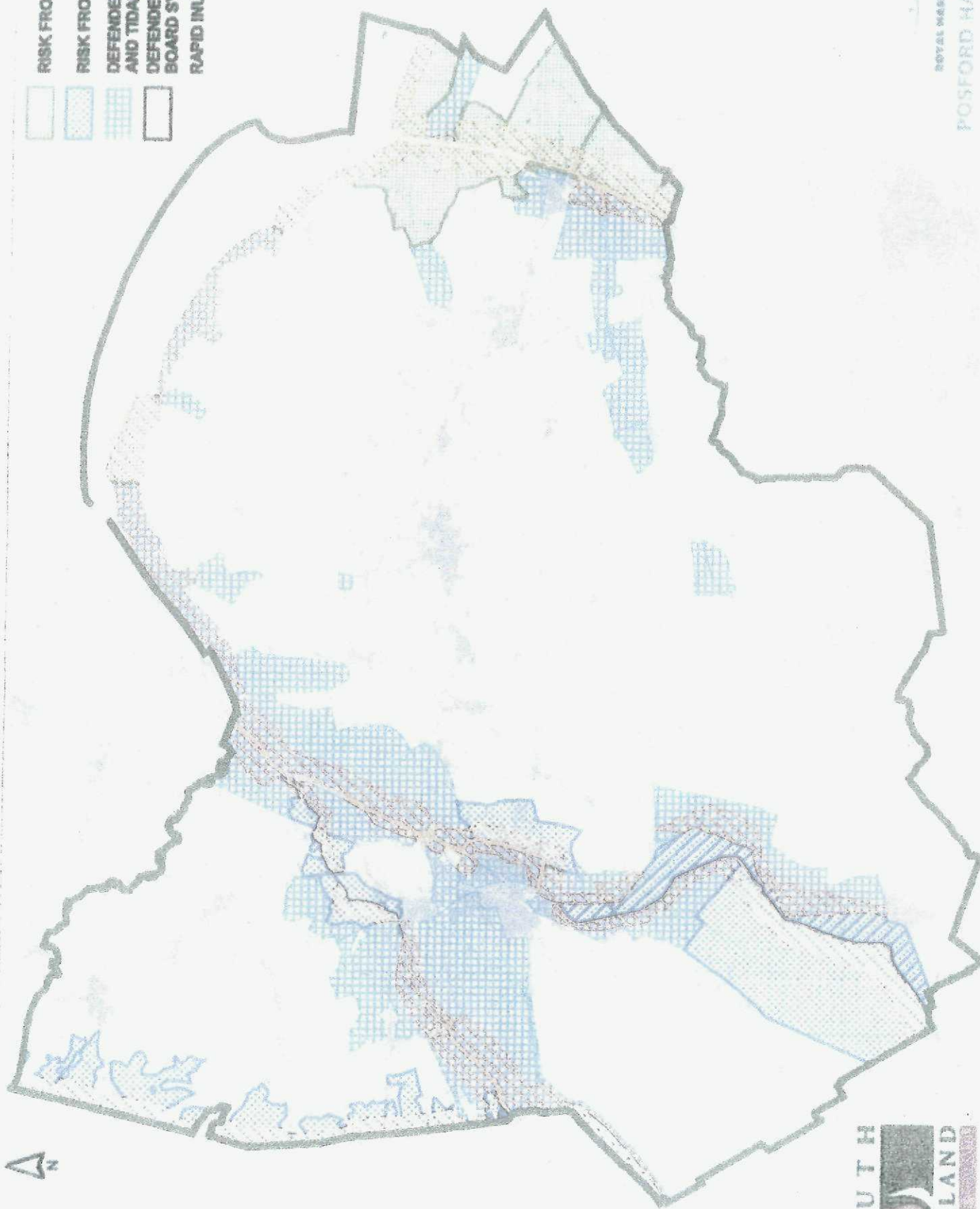
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RISK FROM TIDE

RISK FROM RIVER

DEFENDED BY BANKS
AND TIDAL DOORS

DEFENDED BY DRAINAGE
BOARD SYSTEM

RAPID INUNDATION ZONE

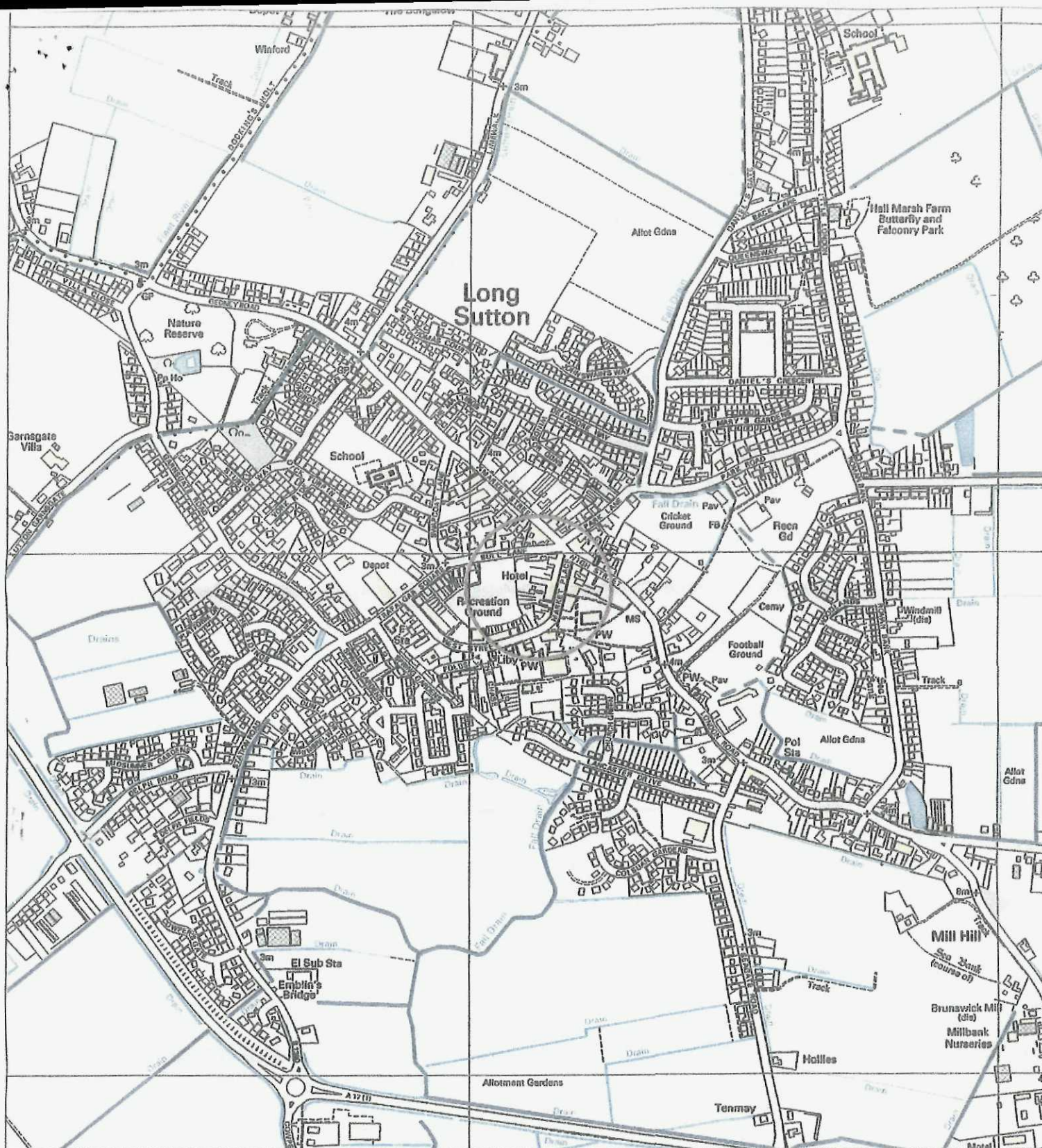
SOUTH



OLLAND

ROYAL HASKONING

POSFORD HASKONING

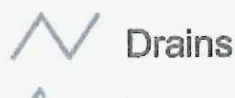


SOUTH HOLLAND INTERNAL DRAINAGE BOARD

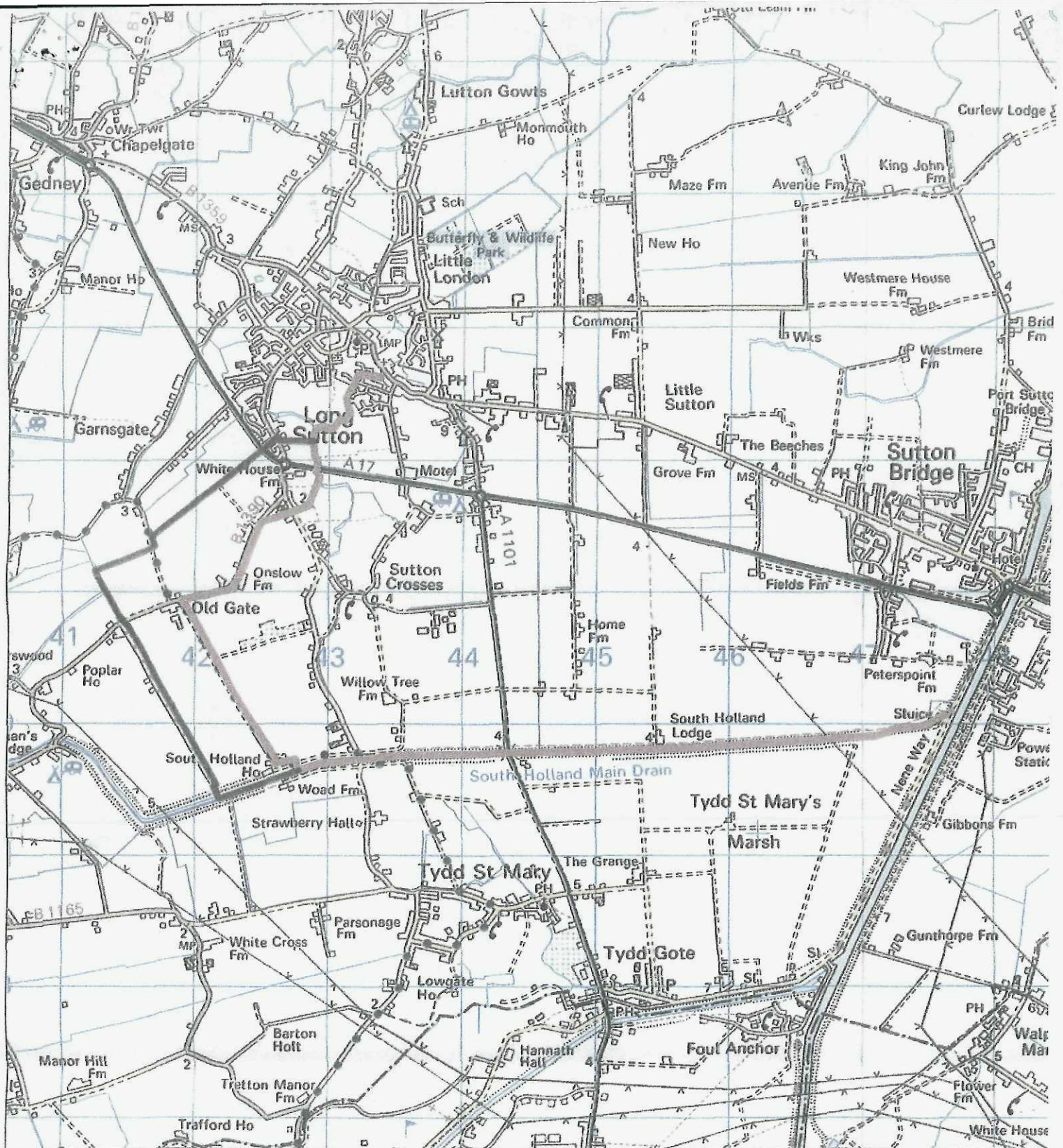
Flood Risk Assessment for The Bull Hotel, Long Sutton

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SOUTH HOLLAND INTERNAL DRAINAGE BOARD

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 Route 1
 Route 2
 Drains
 Pipelines



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**DETERMINED
PLAN**

SHDC
PLANNING & DEVELOPMENT
- 6 JUL 2006
Ref. 0964/06

Author	Drawn	Checked	Approved
Design	Planning	Comms	Finance
Project	Proposed Residential Development, The Bull Hotel, Long Sutton, Leics.		
Client	Mr J Van Dierck		
Site	Existing Site Location		
Scale	1:1250	Date	June 2008
Version	LPC SC	Number	3001189-00