FLOOD RISK ASSESSMENT FOR PROPOSED RESIDENTIAL DEVELOPMENT AT ROMANY WAY, CLAY LAKE, SPALDING, LINCS.

FINAL REPORT

GEOFF BEEL CONSULTANCY

DECEMBER 2014

GCB/HUMPHREY

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Fig 1 - Plans & Elevations –
Peter Humphrey Associates drg. no. 5225/PL01

Fig 2 - Environment Agency Flood Zone Map

Fig 3 - South Holland District Council Strategic Flood Risk Assessment Actual Flood Depths – 2115

Fig 4 - South Holland IDB District Plan

1.0 INTRODUCTION

1.1 A full planning application is to be submitted by Peter Humphrey Associates Ltd on behalf of Mr & Mrs Smith for proposed residential development at Romany Way, Clay Lake, Spalding, Lincs.

1.2 Planning approval requires a Flood Risk Assessment to accompany the application to 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 is shown within Flood Zone 3 of the Environment Agency's Flood Zone Map. The latest Flood Zone Maps have been created as a tool to raise awareness of flood risk with the public and 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 within a defended area of the South Holland District Council's Strategic Flood Risk Assessment Map and located in the South Holland Internal Drainage Board district.

1.3 Geoff Beel Consultancy was appointed on 26th November 2014 to undertake a Flood Risk Assessment.

2.0 LOCATION

2.1 The development site is at Romany Way, Clay Lake, Spalding Drove, Spalding. The National Grid Reference of the central point of the site is TF 25322105.

2.2 The position and extent of the site are shown on Fig 1 – Plans and Elevations 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 the Environment Agency Flood Zone Maps and in a defended area of the Council's Strategic Flood Risk Assessment Map. However it is shown to be liable to flooding due to a breach of the River Welland defences in year 2115.

3.0 THE SITE AND SEQUENTIAL TEST

3.1 The site is alongside an existing residential site at Romany Way.

3.2 The area of development is approximately 0.07 hectare.

3.3 The proposed site layout consists the construction of a new chalet dwelling.

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 the 1 in 100 year fluvial event by a combination of defences, pumping stations and sluice gates meeting the requirements of NPPF. Mitigation measures have been incorporated into the design and construction of the new dwelling.

The site is shown in the present day Flood Zone 1 of the South Holland Strategic Flood Risk Assessment and hence the Sequential Test is met.

4.0 EXISTING FLOOD ALLEVIATION MEASURES

4.1 The site is located within the South Holland Internal Drainage Board district with the nearest 'main drain' open watercourse, Exeter Drain South on the opposite side of Romany Way. Land levels at the site are generally at 3.00m aOD.

4.2 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 1.00m is provided to the lowest land levels.

4.3 The site and surrounding land drains in a northerly direction to eventually discharge via Clay Lake Pumping Station to the Coronation Channel some 500m north of the site.

4.4 The Coronation Channel forms part of the comprehensive system of river defences to Spalding acting as a flood relief channel discharging to the tidal River Welland at Marsh Road Sluice.

4.5 Current maintenance standards within the South Holland Internal Drainage Board 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.

4.6 The fluvial Coronation Channel is located approximately 500m to the north of the site with a standard of protection of 1 in 100 years return period. The Corornation Chanel is the flood bypass channel of the River Welland which with the Crowland and Cowbit Washes situated upstream offer an integrated protection to Spalding and the surrounding district.

4.7 Maintenance standards of the Environment Agency's main rivers and defences are well maintained and regularly inspected for their asset condition.

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 existing IDB main drain system.
b) storm return period of 1 in 50 years being exceeded
c) failure of Clay Lake Pumping Station
d) overtopping and breaching of the fluvial Coronation Channel defences

5.2 The probability of flooding from source a) is low due to the maintenance standards already achieved and managed by 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 50 years.

5.3 Failure of Clay Lake Pumping Station may occur due to long-term mechanical breakdown or power supply being disrupted. However, in these circumstances, if conditions were such to put properties and land at risk of flooding, the Internal Drainage Board would take emergency action to maintain the drainage level of service by utilising temporary pumping equipment. The probability of such an occurrence is also considered to be low.

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 development. The Boards policy regarding the connection of future developments to the arterial system enables a flexible approach to be adopted and meet the criteria for "sustainable urban drainage".

The probability of the site flooding from this potential source is also considered to be low.

5.4 The possible overtopping and breaching of the fluvial River Welland Coronation Channel flood defences which may affect the site under extreme conditions is also considered to be very low. The present standard of defence of 1 in 100 years would most probably have to be exceeded to create such conditions. If a breach, however, did occur, it is shown that the floodwaters could affect the development site of between 0.50-1.00m and a precautionary approach should be adopted as regards proposed floor levels for the development.

5.5 The Coronation Channel earth embankment has a minimum crest level of 6.00m aOD which link with upstream defences to the River Welland of vertical steel sheet piling and concrete capping beam. The Crowland and Cowbit Washes Cradge Bank upstream of the Coronation Channel at Cowbit Road has a minimum crest level of 5.00m aOD.

The embankments of the Coronation Channel were constructed in the 1950's to convey river flows around Spalding. The embankments offer a standard of protection against the 1 in 100 year modelled peak flow water level of 4.80m aOD inclusive of climate change during the next 100 years compared with embankment levels of 6.00m aOD offering a minimum of 1.00 metre freeboard.

The South Holland Strategic Flood Risk Assessment (2010) has carried out breach analysis (see Fig 3) of the combined effect of the 1 in 100 year fluvial and 1 in 200 year tidal events inclusive of climate change up to 2015.

The site is identified as being liable to flooding if a breach of the Coronation Channel occurred up to a depth between 0.50m – 1.00m. Floodwaters would be partly dispersed into the IDB's main drain system via the Wells Drain flowing southwards to the Board's Wisemans Pumping Station.

However, it is necessary to mitigate against this remote risk of flooding and finished floor levels will be raised 1.00m above existing ground level with flood resilient construction incorporated up to 300mm above finished floor level. Sleeping accommodation and safe refuge is available at first floor level.

5.6 The applicant should ensure that the eventual occupiers of the dwelling are sufficiently aware of the risk of flooding, and the standard of defence of the adjoining watercourse. The Environment Agency provides a Flood Warning Service which includes Flood Warning Codes and uses direct warning methods where the risks and impacts of flooding are high. Indirect warnings are provided to all flood risk areas, even those at low risk of flooding. The main method is media broadcast via local radio and also by television.

In addition to direct and indirect flood warnings, the Environment Agency operates a 24 hours a day Floodline Service providing advice and information on flooding contacting 0845 988 1188 and the owners of the property will register with the Floodline Direct Warnings Service to receive any future flood warnings.

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 since the construction of the Coronation Channel in the 1950's.

7.0 PROBABILITIES AND TRENDS OF FLOODING

7.1 The probability of this development flooding from localised drainage systems is very low. It is also intended to construct floor levels of the dwelling 1.00m above ground level with flood resistant/resilient measures incorporated up to 300mm above finished floor level.

7.2 The probability of the site flooding with water from any South Holland IDB drain system 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. Similarly the same standard is provided by the Environment Agency's main river and defences.

7.3 If under very extreme events, levels of floodwater from any Environment Agency or South Holland IDB drain 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.

7.4 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 flood resilient measures incorporated wherever practicable will be appropriate for the design life of the development (i.e. 100 years).

8.0 IMPACTS OF FLOODING

8.1 No significant impacts of flooding are anticipated.

8.2 Floor levels of the residential development will be 1.00m above ground level offering additional protection against impacts arising from any extreme short duration, localised events. Surface water drainage will be discharged to soakaways as per BRE365 and Building Regulations approval.

8.3 The general location of the site within the catchment is such that if flooding occurred from any of the Environment Agency or South Holland IDB river and 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 and agricultural land.

8.5 Safe access and egress to and from the site will be available via the Spalding By-Pass in a south westerly direction to reach Cowbit and the A1073 road on Cowbit Wash Barrier Bank.

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 a pumped sub-catchment of the South Holland IDB area and its location 500m from the Coronation Channel fluvial defences consisting of earth embankments to the 1 in 100 year standard of protection.

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 up to 2015 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.

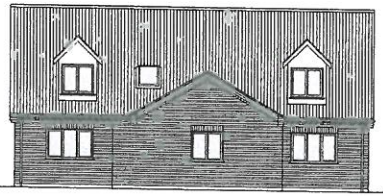
10.0 CONCLUSIONS AND RECOMMENDATIONS

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 defences to a 1 in 100 year return period.
- Although the site is in Flood Zone 3, the actual risk of site flooding from any Environment Agency river system is very low.
- 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.
- Floor levels of the dwelling will be 1.00m above ground level with flood resistant/resilient measures incorporated into the design and construction of the development up to 300mm above finished floor level.
- On site surface water drainage will be discharged to soakaways to BRE365 design requirements and Building Regulations approval.



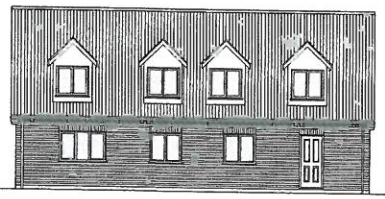
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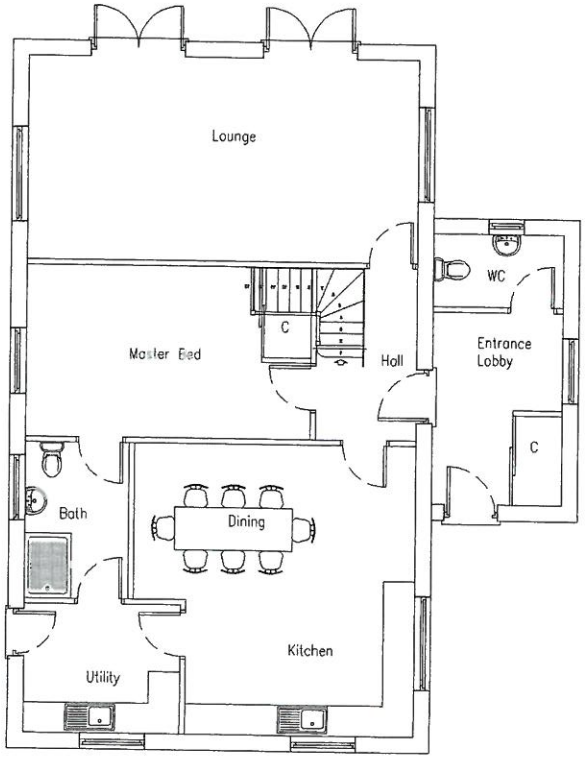
Side Elevation 1:100



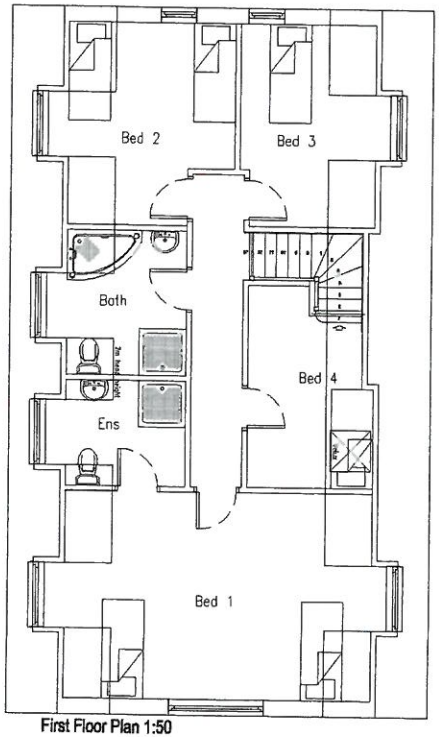
Rear Elevation 1:100



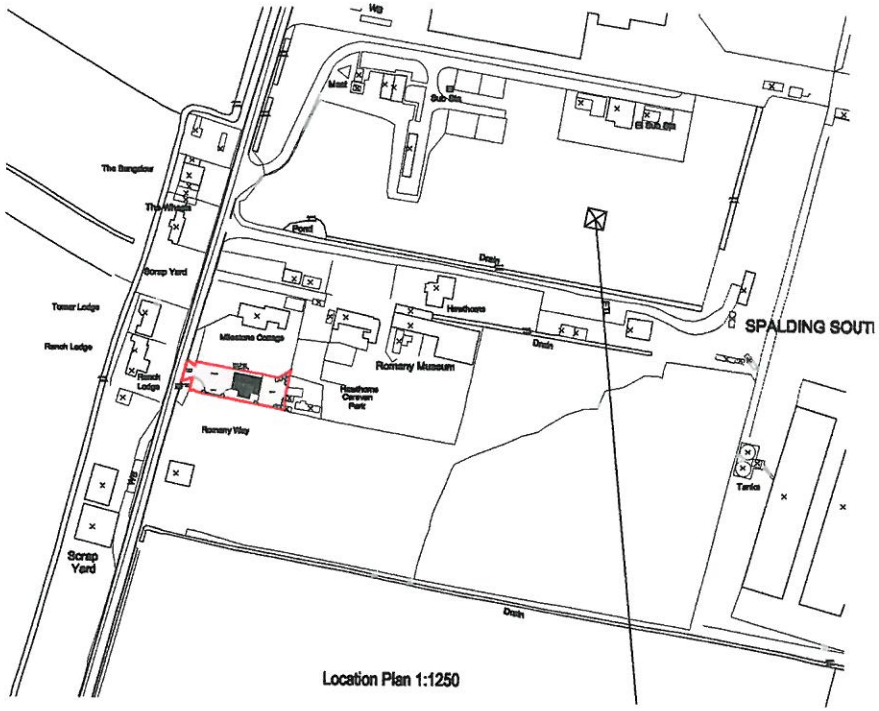
Side Elevation 1:100



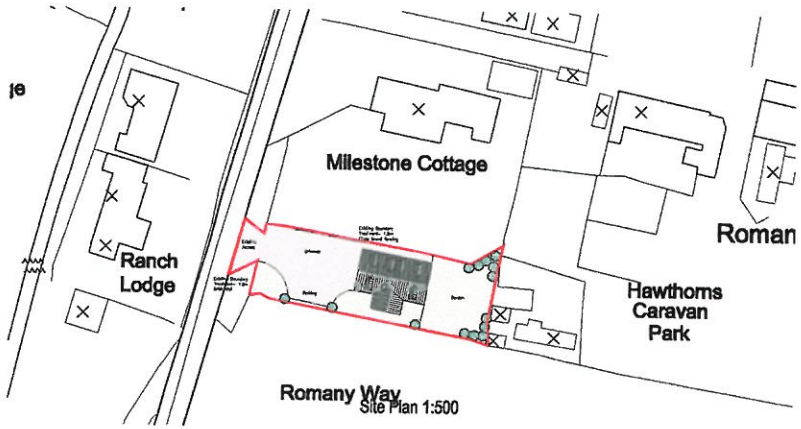
GroundFloor Plan 1:50



First Floor Plan 1:50



Location Plan 1:1250



Romany Way
Site Plan 1:500

CLIENT Mr and Mrs Smith

DATE November 2014 SCALE As Shown JOB No. 5225/PL01

DO NOT SCALE FROM THIS DRAWING

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PROJECT
Proposed Chalet

SITE
Romany Way
Clay Lake
Spalding
PE12 6BL

DRAWING
Elevations, Floor Plan, Site Plan

Environment Agency

Enter a postcode or place name:

Spalding, Lincolnshire Go

Other topics for this area...

Flood Map for Planning (Rivers and Sea)

Flood Map for Planning (Rivers and Sea)

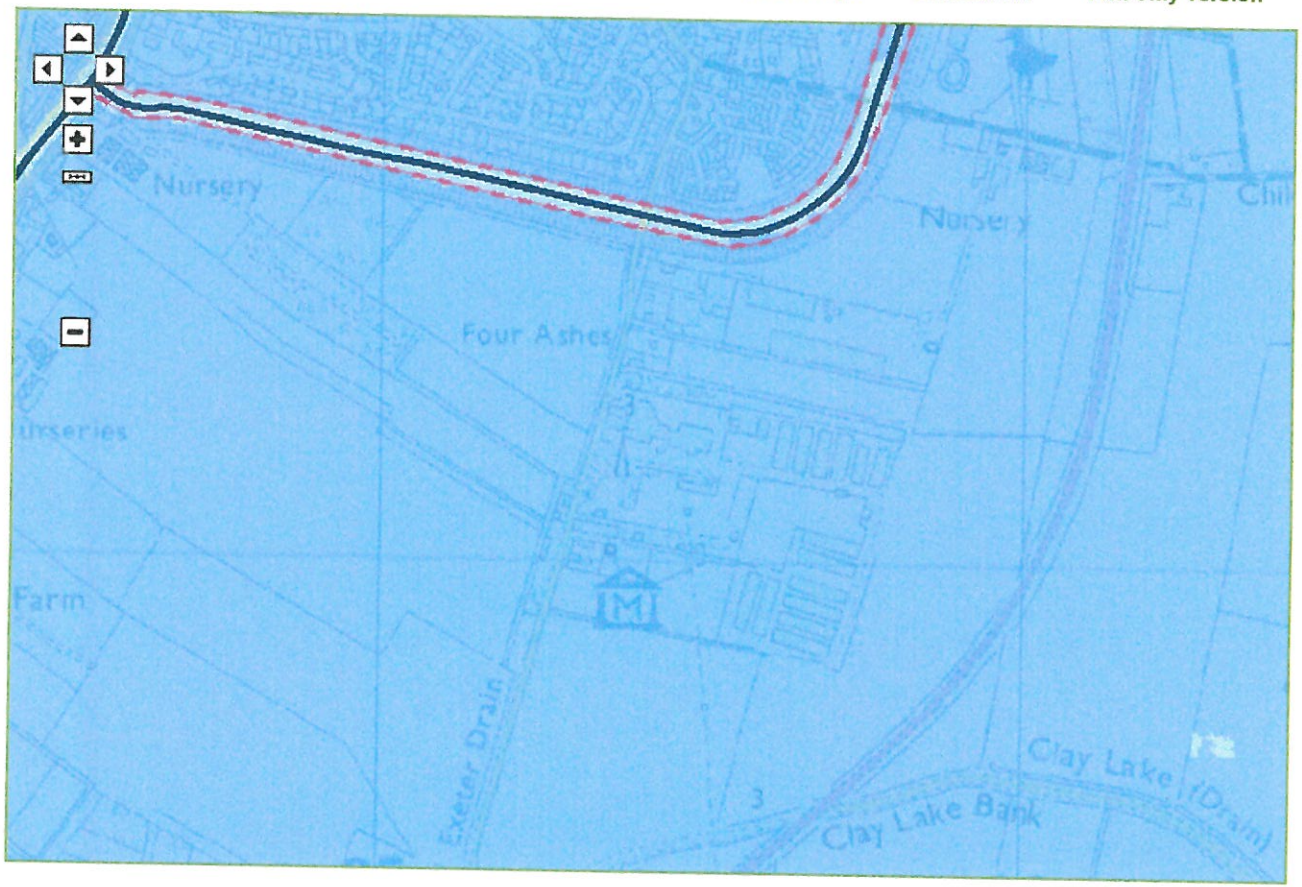
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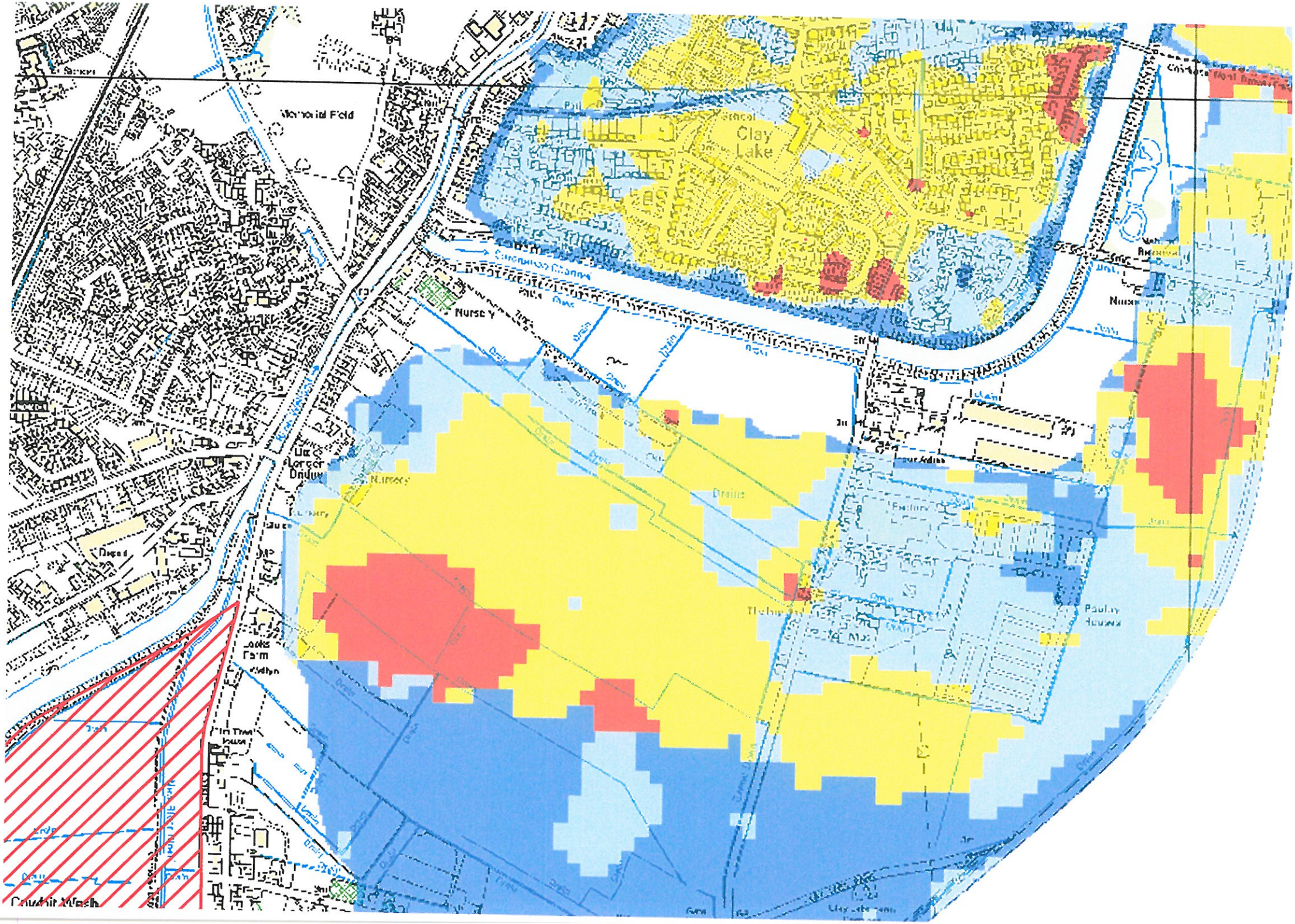
Click on the map to see what Flood Zone (National Planning Policy Guidance definitions) the proposed development is in.

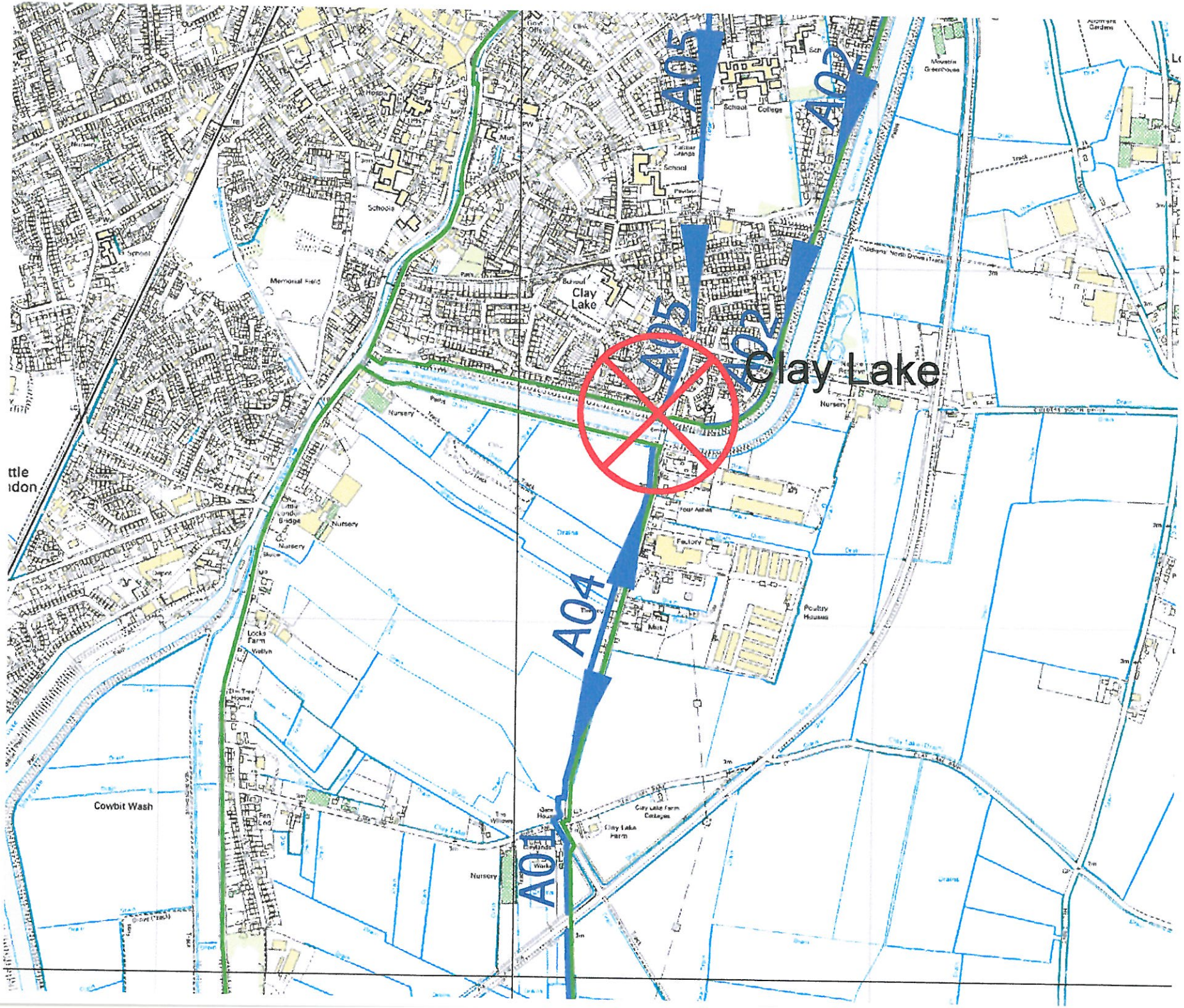
- Flood Map for Planning (Rivers and Sea)
- Flood Zone 3
- Flood Zone 2
- Flood defences (Not all may be shown*)
- Areas benefiting from flood defences (Not all may be shown*)
- River and Sea levels
- Main rivers

X: 525,426;Y: 321,177 at scale 1:10,000

Other maps | Data search | Text only version




Clay Lake
Nursery
Drains
Paultry Houses
Oaks Farm


A05
A02
A05
A02
Clay Lake
A04
A01
Cowbit Wash
Memorial Field
Clay Lake
Nursery
Factory
Poultry Houses
Clay Lake Farm
Clay Lake Farm Cottages
Locks Farm
Schools
School
College