

NATIONAL PLANNING POLICY FRAMEWORK march 2012 - FLOOD RISK

FLOOD RISK ASSESSMENT



**RESIDENTIAL ALTERATIONS
8 SPRING GARDENS,
SPALDING,
LINCOLNSHIRE
PE11 2XL**

DC Architectural Services Ltd

Architectural and Drainage Planning Services

The Barn, Partney Mill, Spilsby, Lincolnshire, PE23 4PE

Tel. No. 05601 500536 and Mobile 07776227893 Email - dcarchitectural@btconnect.co

NATIONAL PLANNING POLICY FRAMEWORK - FLOOD RISK

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National Planning Policy Framework March 2012 (NPPF) – Flood Risk

Flood Risk Assessment

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NATIONAL PLANNING POLICY FRAMEWORK - FLOOD RISK FLOOD RISK ASSESSMENT 1.0

Introduction

1.1 "DC Architectural Services Ltd" have been commissioned to prepare a Site-Specific Flood Risk Assessment to accompany a submission to the Planning Authority seeking consent for the internal alterations to existing house in multiple occupation into 3 self contained flats with no increase in floor area. There is no change in vulnerability classification.

1.2 Objective

- 1.2.1 The objective is to comply with National Planning Policy Framework (NPPF), published by National Government in March 2012. These state that it is a matter for applicants to investigate the potential Flood - associated risks relating to individual development proposals. The purpose of this Flood Risk Assessment is therefore to:
- Demonstrate whether the project is likely to be affected by flooding from any source, either now or in the future.
 - Satisfy the Local Planning Authority that the development would be safe and, where possible, reduces the flood risk overall.
 - Demonstrate whether the flood risk will be increased elsewhere.
 - Demonstrate the measures proposed to deal with the identified flood effects and risks.

2.0 Planning Application

2.1 Planning Application

- 2.1.1 This document is to support a Full Planning Application.

3.0 The Application Site

3.1 Application Site

- 3.1.1 The site is an existing house in multiple occupation. The site is in rural town and is bounded by residential development and roads to all sides (refer Appendix E). The site is 'level' being in fenland area(refer to site plan at Appendix A).

4.0 Existing Planning Permission

- 3.1.2 The site as a whole has the benefit of existing and established planning use of house in multiple occupation

5.0 Proposed Development

5.1 Development

- 5.1.1 The development is for changing HMO (residential) to 3No flats (residential) Appendix E shows an illustrative layout of the proposed development. Appendix C shows the existing site.

6.0 Assessment of the Risk

6.1 Assessment of the Risk

There are four areas to consider in the context of this:

6.1.1 Coastal

The Environment Agency flood maps appendix A identify the site as flood zone 3 at risk from flooding, the Environment Agency have been consulted and the site is assessed as having an annual probability of flooding of between 0.1% (1 in 1000) and 0.5% (1 in 200) probability in each year depending specifically where on the site is considered.

6.1.2 Main River

The nearest EA asset is the River Welland (265m from the proposal). The Environment Agency map indicates the possibility of river flooding. This supports the identification of the site falling in Zone 3. The South Holland District Council Strategic Flood Risk Assessment appendix D takes into account the existing defenses.

Throughout the area, banks are inspected, assessed as in good condition failure is unlikely. Flood is therefore most likely from overtopping resulting in low velocities and shallow depths. The South Holland District Council SFRA identifies the surface water risk of the site remains within the low risk area a less than 0.1% annual probability.

6.1.3 Ordinary Water Course

There are no significant Internal Drainage Board assets nearby.

5.1.4 Land

The site lies on land to the Due South of the town centre in existing residential shown in Appendix E. It lies on a 'level' ground surrounded by property in a residential area. The level on the highway outside is 4.0m ODN

The land lies in a flat typical fenland. Its position means that it will not be subject to flooding from higher land.

5.1.5 References

The South Holland District Council Strategic Flood Risk Assessment has been used as a source of information .

Environment Agency. Flood information

Internal Drainage Board.

Zone	Characteristic	Assigned Annual Probability of Flooding
1	Low Probability	<u>Fluvial & Tidal</u> Less than 0.1% (1 in 1000 or more years)
2	Medium Probability	<u>Fluvial</u> 0.1% to 1% (from 1 in 100 to 1 in 1000 years) <u>Tidal</u> 0.1% to 0.5% (from 1 in 200 to 1 in 1000 years)
3a	High Probability	<u>Fluvial</u> Greater than 1% (1 in 100 or less years) <u>Tidal</u> Greater than 0.5% (1 in 200 or less years)
3b	Functional Floodplain	<u>To be identified by LPA in agreement with Environment Agency</u>

5.1.5 Evaluation of the Risk (including allowance for climate)

Flooding of the Site

Evaluation		1 Low		5 High		Risk		Magnitude				
		1	2	3	4	5		1	2	3	4	5
Land			/						/			
Fluvial			/								/	
Tidal			/						/			
Drains			/						/			

Flooding Elsewhere

Evaluation		Risk					Magnitude				
		1	2	3	4	5	1	2	3	4	5
Land		/					/				
Property		/					/				

The risk is evaluated as **Low**

5.1.6 Residual Risk of Flooding

The actual risk to the site taking into account flood defences is low however a residual risk remains in the event of defence failure ie over topping or breach.

ANNUAL CHANCE 0.5% (1:1000) FLUVIAL PREDICTIONS 2115

		2011	2115
Over Topping	Max Hazard	-	-
	Max Depth	-	-
	Max Velocity	-	-
Breach	Max Hazard	-	-
	Max Depth (m)	-	-
	Max Velocity (m/s)	-	-

ANNUAL CHANCE 0.5% (1:1000) TIDAL PREDICTIONS 2115 (Breach not provided)

		2011	2115
Over Topping	Max Hazard	-	Low/danger for some
	Max Depth	-	0 – 0.25m
	Max Velocity	-	0.3 – 1.0 m/s
Breach	Max Hazard	-	-
	Max Depth (m)	-	-
	Max Velocity (m/s)	-	-

5.1.6 Risk Conclusions

Having identified the site in relation to the South Holland District Council SFRA and EA predictions, the site is confirmed as Zone 3. From the Environment Agency Flood Risk Matrix minor domestic not exceeding 250m² does not require a sequential and where necessary exception test.

Zone 1 Low Probability

Definition

This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%).

Appropriate uses

All uses of land are appropriate in this zone.

FRA requirements

For development proposals on sites comprising one hectare or above the vulnerability to flooding from other sources as well as from river and sea flooding, and the potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new development on surface water run-off, should be incorporated in a FRA. This need only be brief unless the factors above or other local considerations require particular attention. See Annex E for minimum requirements.

Policy aims

In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of sustainable drainage techniques.

7.0 Sequential Test

7.1 Sequential Test

7.1.1 A sequential test is not required for minor work to existing building

7.1.4 An exception test would not be required for the more vulnerable classification.

Figure 4.1 Application of the Sequential Test at the Local level for LDD preparation

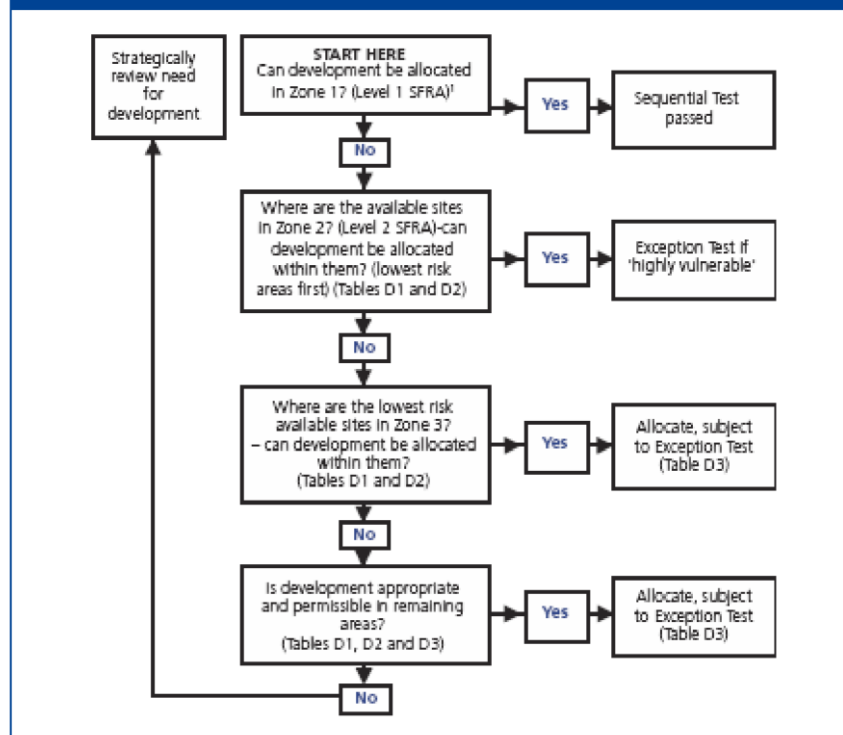


Table D.2: Flood Risk Vulnerability Classification

Essential Infrastructure	<ul style="list-style-type: none"> • Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk, and strategic utility infrastructure, including electricity generating power stations and grid and primary substations.
Highly Vulnerable	<ul style="list-style-type: none"> • Police stations, Ambulance stations and Fire stations and Command Centres and telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent.¹⁹
More Vulnerable	<ul style="list-style-type: none"> • 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.
Less Vulnerable	<ul style="list-style-type: none"> • Buildings used for: shops; financial, professional and other services; restaurants and cafes; hot food takeaways; offices; general industry; storage and distribution; non-residential institutions not included in 'more vulnerable'; and assembly and leisure. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment plants. • Sewage treatment plants (if adequate pollution control measures are in place).
Water-compatible Development	<ul style="list-style-type: none"> • Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations. • Sand and gravel workings. • Docks, marinas and wharves. • Navigation facilities. • MOD defence installations. • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation). • Lifeguard and coastguard stations. • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. • Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

8.0 Exemption Test

8.1 Exemption Test

8.1.1 The appropriate designate in table D3 would indicate an exemption test is not required.

Table D.3²²: 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	✓	x	Exception Test required	✓
	Zone 3b 'Functional Floodplain'	Exception Test required	✓	x	x	x

9.0 Existing Drainage

9.1 Existing Drainage

9.1.2 The site is an existing dwelling so the existing and the proposed site drainage area will be the same and the existing drainage will be utilized unchanged. The existing roofs are drained by a series of gutters and downpipes this is to remain unchanged.

9.1.3 The land is under layered with silty subsoils. The plan in Appendix C shows the existing buildings.

10.0 Effect of the Proposal

10.1 Effect of the Proposal

10.1.1 The effect of the proposal will not increase the probability of flooding elsewhere due to the neutral off site run-off rate achieved.

11.0 Effect of the Proposal on People and Property

11.1 Flooding Effect Fluvial

11.1.1 The existing site of site is made up permeable grassed areas, concrete pave and roof areas with drainage by percolation into the ground.

11.1.2 The Environment Agency considers the risk of overtopping of the River Welland to the south east to have the highest probability of occurring in any one year the analysis provides an insight into risks and projected depths, the site levels provide some protection and the area remains outside the low risk area and the projected depths 2115 are outside the projected depth area for the building between 0 - 0.5m. The site remains outside the low risk area. The bank condition however is considered good and the annual probability remains Low.

11.2 Flooding Effect Tidal

11.2.1 The flooding effect on the site places the site in a EA zone 3 flood risk area the risk identified by EA has probability of occurring during a 1:1000 (0.1%) in any given year there is likely to be advance warning as the most likely event scenario would be when heavy rain fall storm and high tide occur simultaneously an event the EA can predict with some accuracy the depth given the distance to travel and the extent of the flat fen area is predicted to be shallow and of low velocity. The site in the EA model falls out side the area affected by tidal over topping as shown in appendix D the Tidal Hazard mapping predictions at year 2115

11.3 Flooding Effect Drains

11.3.1 The flooding from local drains is less easy to predict as it could occur at any time during heavy rain if a drain has become blocked, the IDB have a regular maintenance program in place, on site drainage should be inspected at least annually which will mitigate this event. The site is some distance from IDB assets.

12.0 Assessment of the Actual Risk and Its Implications on the Site

12.1 Assessment of the Actual Risk and Its Implications on the Site

12.1.1 It is clear that the site is located in Zone 3 as identified in the EA Data and South Holland SFRA. The actual risk is identified as low its implication for the site given the proposed and existing use should not prevent a planning application being approved.

13.0 Climate Change

13.1 Climate Change

13.1.1 Currently the assumption is that climate change will impact on global sea levels and impact subsequently on surge tides and an increase in significant storm events. The future risk is therefore increased. The design of new any drainage system should have a 30% allowance for climate change.

14.0 Mitigation Measure

14.1 Mitigation Measures

14.1.1 Given the Zone 3 low risk and the more vulnerable use class of the site there no are specific mitigation measures required other than to have an adequate evacuation plan in place which is address in part two of this document.

14.1.3 The proposed floor levels are 4.0m ODN.

15.0 Environment Agency

15.1 Environment Agency

15.1.1 Environment Agency

15.1.2 Hazard mapping - breaching.

15.1.3 > year 2115 0.5% (1 in 200) chance event

15.1.4 > year 2115 0.1% (1 in 100) chance event

15.1.5 The site is not affected by breaching for the present day (2011) scenarios. Appendix J contains Environment Agency predictions

16.0 Drainage Design

16.1 Drainage

The drainage design shall adopt the principle of no increased run velocities off, no change to drainage system therefore no change to flow velocities off-site flows.

17.0 Conclusion

17.1 Conclusion

It is our conclusion that the development complies with NPPF and passes, or is not required to pass, the sequential and exemption tests and an adequate drainage. It is our opinion that there is no reason that the planning application should not be approved.

PART TWO

Evacuation Plan

20.0 Introduction

20.1.1 Primarily any plan of action should be aimed at serving the safety of occupants and visitors , any written plan should allow adaption's to be considered to ensure best response on an incident by incident basis.

20.1.2 The flood incident differs significantly from a fire incident and this cannot be emphasised enough. The warnings and evacuation in the event of fire are intended to remove the occupants off to a safe place as soon as possible ideally in less than 3 minutes. Given the prevailing conditions during a flood event this is very unlikely to be the best action to be taken. Staff and employees are in the first instance to remain in the building.

21.0 Risks

21.1.1 There are other risks involved during a flood event apart from water levels which are not always covered, for example when the flood is likely to occur.

- During heavy rain
- High winds
- Power failure
- Cold weather
- Dark during winter months
- Fast moving water
- Hidden hazards in water (ie missing manhole covers, kerbs etc)

21.1.2 A fire tends to be very localised with only a few minutes warning for a flood to raise the alarm and carry out evacuation by fire drill is wholly inappropriate any may put the occupants at greater risk.

21.1.3 A flood event other than localised surface water from a blocked drain for example is likely to be more regional has greater warning time probabilities and requires a considered evacuation response.

21.1.4 During a flood alarm you should not:-

- Congregate outside
- Leave belongings behind (particularly outdoor clothing and lunch boxes)
- Send employees home to an environment at greater risk.

21.1.5 To emphasis should be on a calm considered response and remaining on site in first instance is likely to be the best response as rapid onset of hypothermia is a real risk in wet cold conditions.

22.0 FLOOD ACTION AND EVACUATION RESPONSE

22.0 Preparation

20.1.1 The site is registered with the Environment Agency Flood Line (0845 988 1188) and will receive automated warnings to the main switchboard together with text alerts to main reception

22.1 Monitoring

20.1.2 Available sources of information

Environmental Agency website; www.environment-agency.gov.uk/flood
Environmental Agency flood line ; 0845 988 1188

BBC Radio Lincolnshire 94.9FM

Lincs FM 102.2FM (live daytime only)

Met Office website; www.metoffice.gov.uk

Highways Agency website; [www. highwaysagency.gov.uk](http://www.highwaysagency.gov.uk)

Other sources of information:-

Lincolnshire County Council

22.2 Action

20.2.1 Refer to sections 18 and 19 and carry out actions now.

23.0 ENVIRONMENT AGENCY FLOOD WARNING ALERTS

23.1.1 The Environment Agency has for code levels relating to levels of risk and suggested actions, it should be noted that these can be issued in any order.



Flood Watch : flooding in low lying land and roads expected. Be Aware, be prepared and watch out!

- Monitor local news and weather reports
- Be aware of water levels nearby
- Be prepared to act on flood plan
- Check safety of pets and livestock
- Charge you mobile



Flood Warning: flooding in homes and businesses. Act now!

- Move cars, pets, food, valuables and important documents to safety
- Turn off gas, electricity and water supplies if it is safe to do so
- Stay in high place with an escape route
- Be prepared to evacuate
- Protect yourself, your family and help others
- Act on your flood plan



Severe Flood Warning: severe flooding is expected. There is extreme danger to life and property. Act now!!

- Collect your things you need for evacuation
- Turn off gas, electricity and water supplies if it is safe to do so
- Stay in high place with a means of escape
- Avoid electrical sources
- In danger call 999 immediately
- Listen to emergency services
- Act on your flood plan



All clear: severe flood watches or warnings no longer in force for this area.

- Keep listening to weather reports
- Only return to evacuated buildings if you are told it is safe
- Beware of sharp objects and pollution in flood water
- If property and belongings are damaged contact insurance company for advice before cleaning up

24.0 FLOOD ACTION PLAN

- 24.1.1 In the event of a flood warning being issued, the Environment Agency aim to issue warning at various levels, this information is good but cannot be guaranteed so some judgement based on other to conditions is required.



Level 1 - Flood Alert - Monitoring

- 24.1.2 Instigate actions outlined in Environment Agency flood alert and alert all members of staff of the condition and brief them on the possibility of escalated action. Monitor situation on Radio and websites and flood line (it is important not to overuse web and phone functions).



Level 2 - Flood Warning - Preparation

- 24.1.3 Instigate actions outlined in Environment Agency flood warning check on location of all occupants, prepare staff for possibility of escalated action, distribute copies of flood action plan to all staff and assess if occupants home destination is at greater risk than present location.
- 24.1.5 Taken Action Roll call
 Collect belongings
 Review possible options for evacuation
 Ensure all staff are prepared for next action
 Make arrangements for closing site and evacuation
 including Arrangement of transport and confirm safe
 destinations. Inform emergency services or your actions



Level 4 - Severe Flood Warning - Action

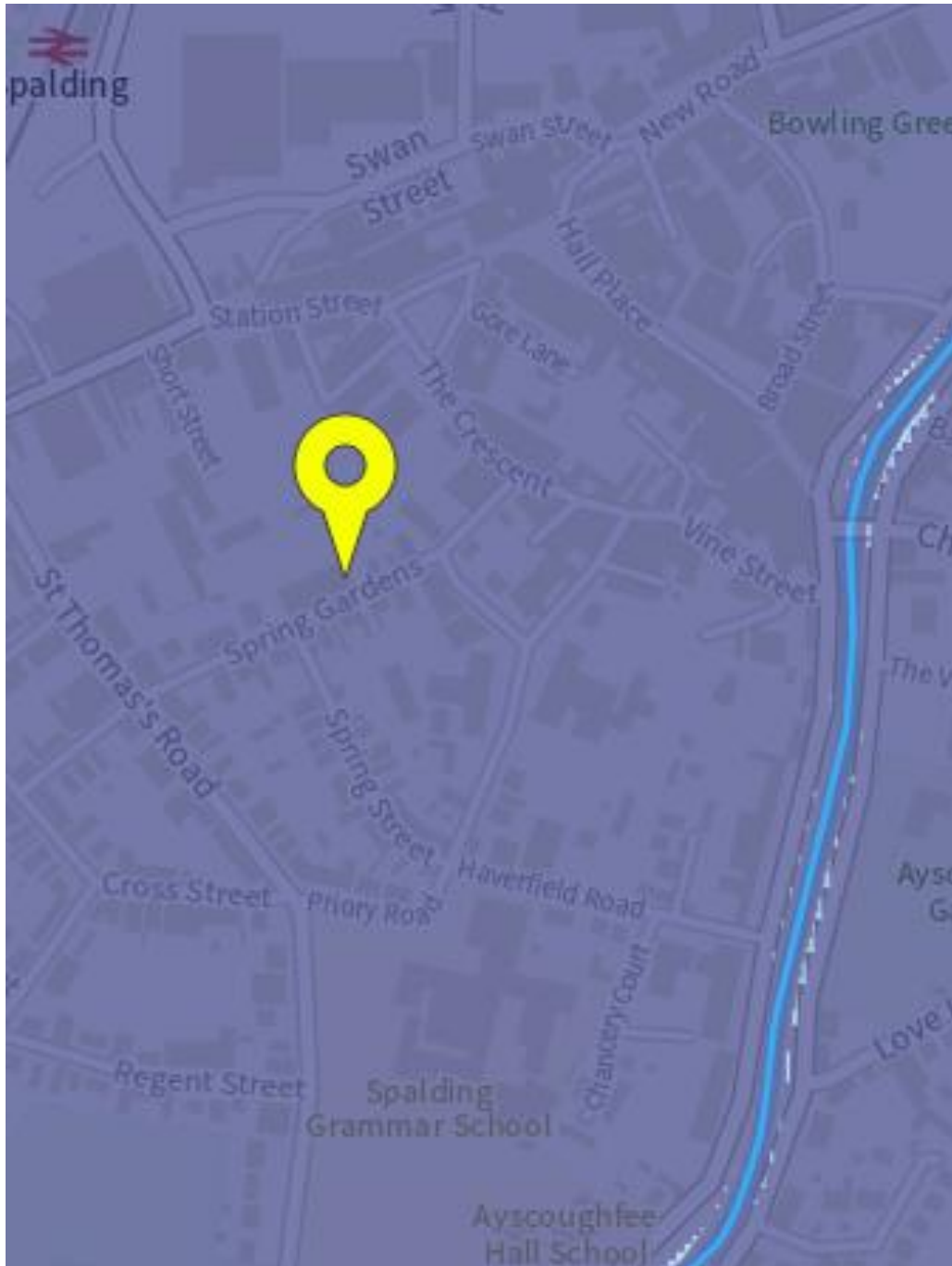
- 24.1.6 Instigate actions in EA given proceed to next level in action plan.
- 24.1.7 At this point the site should have already been or be in the process of evacuation.
- 24.1.8 In the event of a severe warning being issued without prior notice or accelerated conditions without notice using the EA predicted water levels depth, velocities and directions there is walk out on foot is possible but not practical due to the distance and possible condition variations on route without outside help to transport occupants to place of safety
- 24.1.9 Short notice evacuation with no positive destination is possible using vehicle used by staff for getting to work, clearly this action is only relevant in extreme conditions.
- Take from site useful items that could be carried (food, drink, clothes) Inform emergency services of your actions.
- 24.1.10 In the event of site inundation imminent warning or without warning the site has sufficient first floor space for a 'stay put action to' to take place where they can wait until water subsides or until rescue, it should be noted that this action is unlikely to result in rescue in the short term as emergency services will prioritize more vulnerable groups, as much self help as possible will be required.
- 24.1.11 For safe place and escape route Refer to Appendix K



Level 5 - Warning no Longer in Place

- 24.1.12 Instigate actions in EA guidance when safe to do so visit site to assess condition and suitability of a return to site by and publish date when able to do so.

Appendix A



Environment Agency food zone map

Appendix B



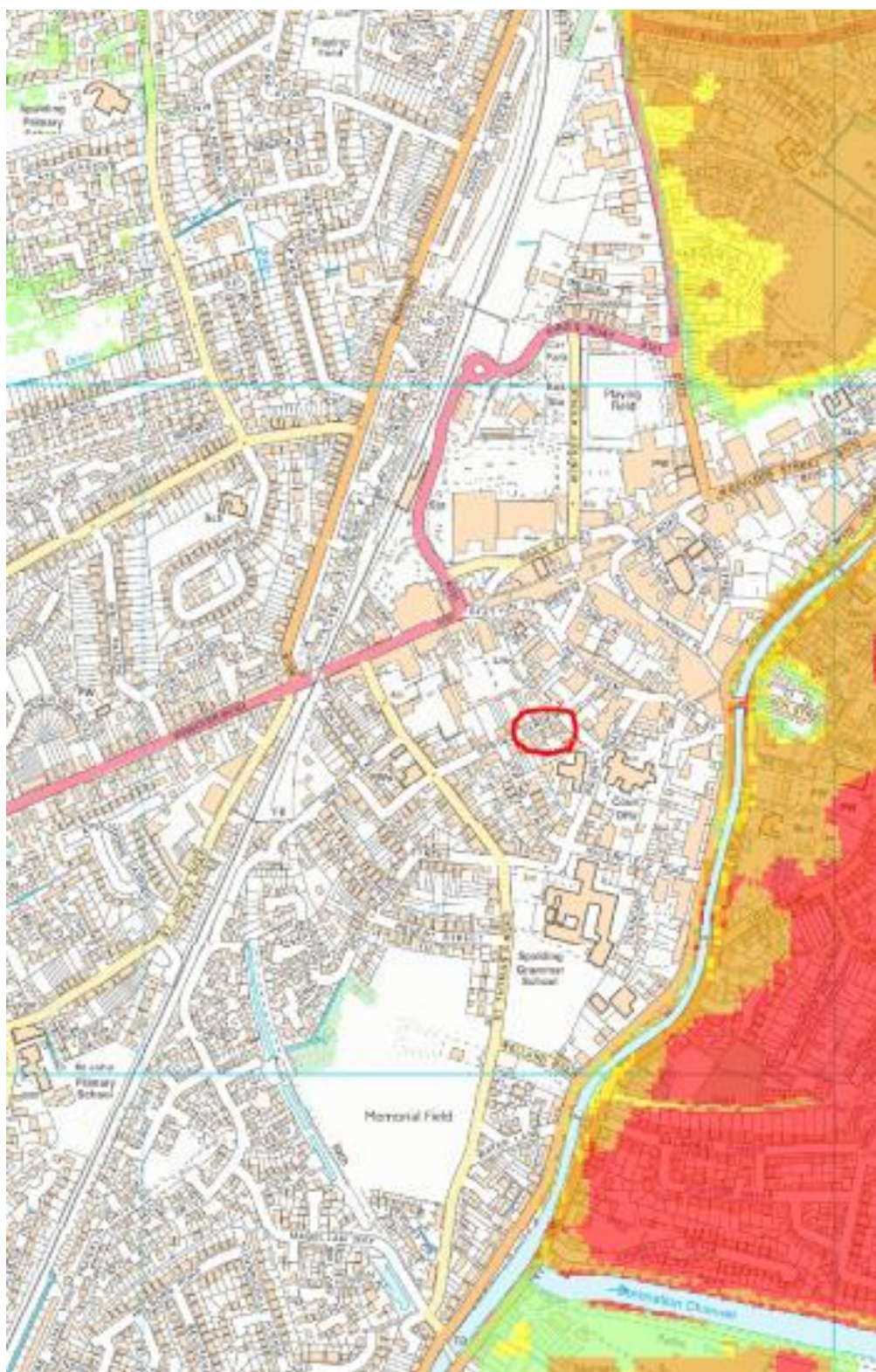
Site Plan

Appendix C



Location plan

Appendix D



Residual Flood risk year 2115 1% Fluvial / 0.5% Tidal Event Probability

Appendix E

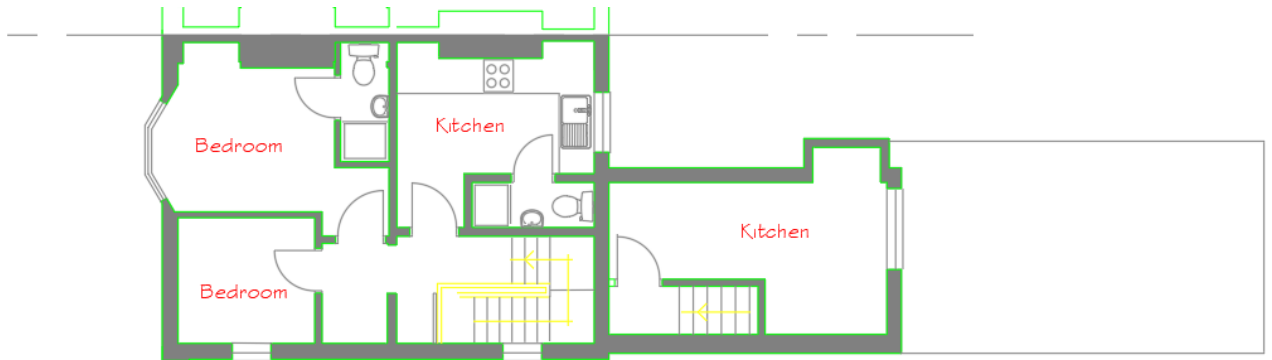


March 2007

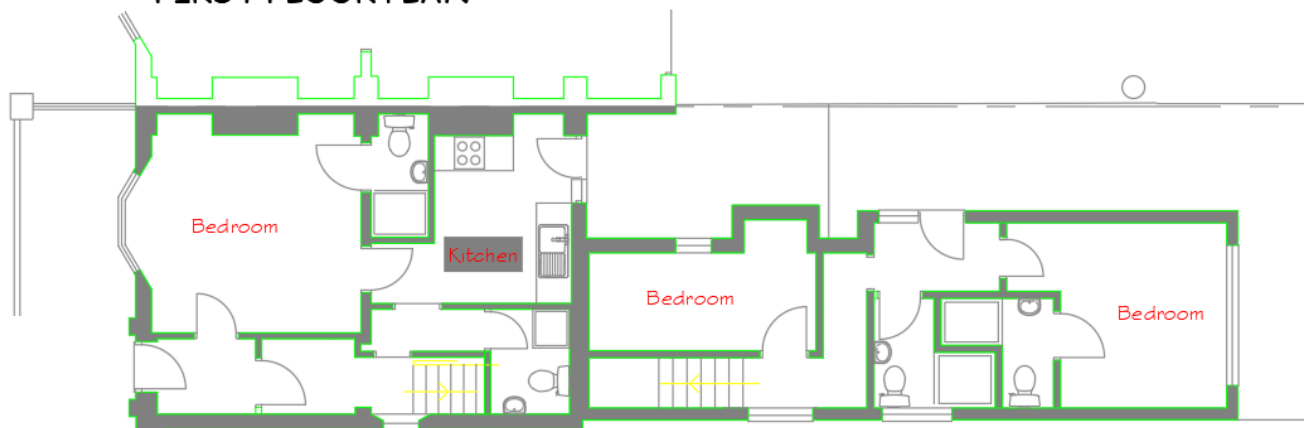
Development and flood risk: when to consult the Environment Agency

A1 Development category	B1 Development (including boundary walls etc.) within 20 metres of the top of a bank of a Main River	C1 Includes culverting or control of flow of any river or stream	D1 Within Flood Zone 3	E1 Within Flood Zone 2	F1 Within Flood Zone 1
A2 Householder development and alterations	B2 Consult EA Note	C2 Consult EA with FRA showing design details of any culvert or flow control structure proposed	D2 No consultation - see standard comment Note	E2 No consultation - see standard comment Note	F2 No consultation - No EA Advice
A3 Non-residential extensions with a footprint of less than 250m ²	B3 Consult EA Note	C3 Consult EA with FRA showing design details of any culvert or flow control structure proposed	D3 No consultation - see standard comment Note	E3 No consultation - see standard comment Note	F3 No consultation - No EA Advice
A4 Change of use FROM 'Water Compatible' 'Less Vulnerable' development	B4 Only consult EA if site also falls within Flood Zone 3. FRA Required	C4 No consultation - no EA advice	D4 Consult EA with FRA	E4 No consultation - no EA advice	F4 No consultation - No EA Advice
A5 Change of use RESULTING IN 'Highly Vulnerable' or 'More Vulnerable' development	B5 Only consult EA if site also falls within Flood Zone 3 or 2. FRA Required	C5 No consultation - no EA advice	D5 Consult EA with FRA	E5 Consult EA with FRA	F5 No consultation - No EA Advice
A6 Operational development less than 1 hectare	B6 Consult EA	C6 Consult EA with FRA showing design details of any culvert or flow control structure proposed	D6 Consult EA with FRA and Sequential Test Evidence (and where required confirm Exception Test has been applied)	E6 Consult EA with FRA and Sequential Test Evidence (and where required confirm Exception Test has been applied)	F6 No consultation - No EA Advice
A7 Operational development of 1 hectare or greater	B7 Consult EA	C7 Consult EA with FRA showing design details of any culvert or flow control structure proposed	D7 Consult EA with FRA and Sequential Test Evidence (and where required confirm Exception Test has been applied)	E7 Consult EA with FRA and Sequential Test Evidence (and where required confirm Exception Test has been applied)	F7 Consult EA with FRA

Appendix F



FIRST FLOOR PLAN



GROUND FLOOR PLAN

Floor plans