

NATIONAL PLANNING POLICY FRAMEWORK march 2012 - FLOOD RISK

FLOOD RISK ASSESSMENT

GRID REF. TF35066 26239

**HOLBEACH HOSPITAL,
BOSTON ROAD,
HOLBEACH,
SPALDING,
PE12 8AQ**



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NATIONAL PLANNING POLICY FRAMEWORK - FLOOD RISK

FLOOD RISK ASSESSMENT

1.0 Introduction

"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 construction of 8 bedrooms and garden room, at Holbeach Hospital, Boston Road, Holbeach, Spalding, Lincolnshire. PE12 8AQ

1.1 Objective

1.1.1 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 for 8 bedrooms and a garden room in connection with existing facilities.

3.0 The Application Site

3.1 Application Site

3.1.1 The site is part of Holbeach Hospital and is located on pavement and lawn adjacent to Hospital. The site totals an area of 1.6 hectares. The site is bounded by open fields and scattered buildings to all sides (refer Appendix D). The site is level being in open fenland at a height of 3.567m ODN (refer to site plan at Appendix A).

4.0 Proposed Development

4.1 Development

4.1.1 The development is for airfield 8 bedrooms and garden room including viewing room, training room and managers accommodation together external works together with associated landscaping as part of the proposal. Appendix B shows an illustrative layout of the proposed development. Appendix C shows the existing site.

5.0 Assessment of the Risk

5.1 Assessment of the Risk

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

5.1.1 Coastal

The Environment Agency Flood maps identify the area to be in a Zone 3 which shows that the area, taking into account flood defences, a medium risk of between 1:100 (1%) and 1:30 (3.3%) annual probability of flooding in any one year.

The South Holland District Council Strategic Flood Risk Assessment identifies the location of the site as Zone 3.

5.1.2 Main River

The Environment Agency identified the site, without taking into account existing defences, as having a less medium chance of flooding in any one year. The nearest EA river is the River Welland.

5.1.3 Ordinary Water Course

The site is surrounded by series of drainage ditches which form part of the overall system of draining this typical low lying area of South Holland. The flood risk maps identify these ditches as a potential source of flooding. A detailed study of the map and our field investigation reveals that the EA map is accurate in assessment in relation to flood extent and levels.

5.1.4 Evaluation of the Risk

Flooding of the Site

Evaluation		1 Low 5 High		Risk			Magnitude				
		1	2	3	4	5	1	2	3	4	5
Land		/						/			
Water				/						/	
Sea				/			/			/	
Drains		/					/				

Flooding Elsewhere

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

The risk is evaluated as **Low**

5.1.5 Land

The site lies to the east of the existing village centre. The change is on a parcel of land bounded by farmland shown on aerial photograph (Appendix D) and detailed on the location plan in Appendix E.

The land lies on typical flat fenland countryside. Its position means that it will not be subject to rapid inundation from higher land and is not subject to flood flows from elsewhere.

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.

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.

6.0 Flood Risk Matrix

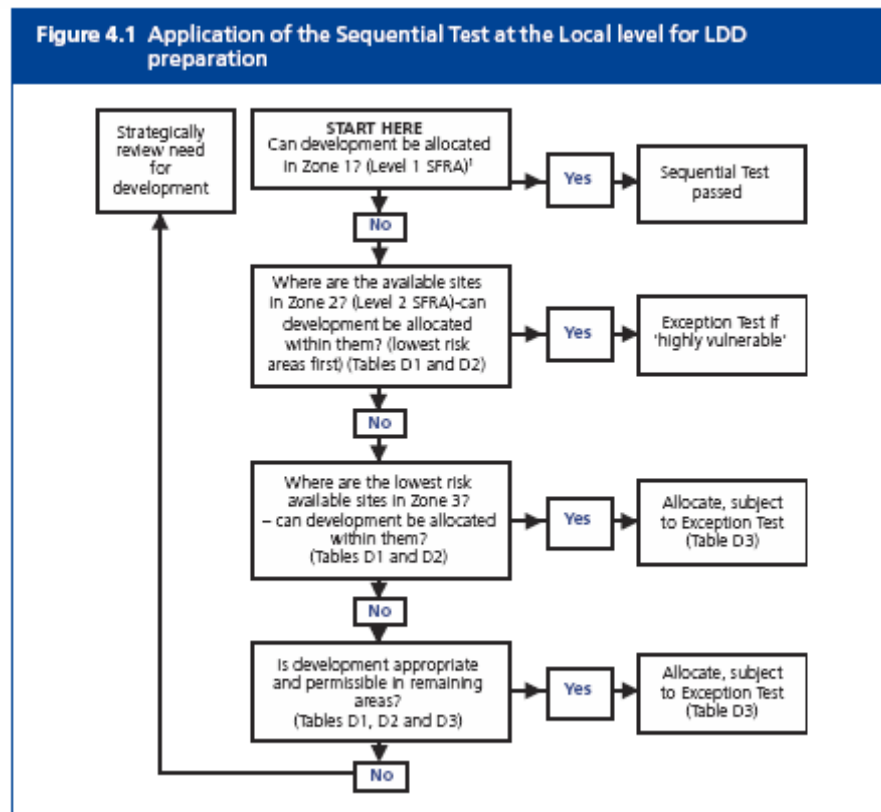
6.1 Flood Risk Matrix

- 6.1.1 The flood risk matrix in Appendix F identifies non residential development of greater than 250 square meters in Zone 3 as requiring a flood risk assessment. Consultation with the EA is required. A detailed drainage scheme is required before commencement.

7.0 Sequential Test

7.1 Sequential Test

- 7.1.1 This risk-based approach endeavours to place development that is most vulnerable away from areas that are at most risk.
- 7.1.2 This development falls into EA Zone 3: medium probability risk of flooding. This information is to be used in applying the test.
- 7.1.3 When applying the test as figure 4.1, the proposal passes the test being in Zone 2; more vulnerable use category is considered compatible.



The above figure demonstrates the compatibility of the proposal within Flood Zone 3 and passing of the sequential test. Subject to exemption test if highly vulnerable.

The above figure of 4.1 demonstrates the compatibility of the proposal within flood Zone 2 and passing of the sequential test.

This development falls into SFRA Zone 3 probability of flooding. This information is to be used in applying the test. When applying the test, the availability of suitable alternative sites in Zone 1 will need to be considered and as the nearest Zone 1 land is 6.0km from the site in and unsustainable location remote from the site where , the location of facilities within the hospital it is imperative and it is clear that there is no other option. The proposed site is the only logical location on the site where the management structure is required to operate the existing site use already in place. When assessed against table D,2 the proposal falls into use category; more vulnerable. This is considered appropriate where the development category and the application site is concerned.

Table D.2: Flood Risk Vulnerability Classification

Essential Infrastructure	• 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	• 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	• 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	• 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	• 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

- 8.1.2 Exception test as more vulnerable in above is required as below
- 8.1.3 the development provides wider sustainability benefit being the provision essential community hospital facility.
- 8.1.4 The proposal is on 'developable or developed land' being part of the hospital development area in the South Holland Development Plan.
- 8.1.5 Proposal is demonstrable as 'acceptable' and the drainage solution provide on site attenuation.
- 8.1.6 The proposal passes the exception test as above

9.0 Existing Drainage

9.1 Existing Drainage

- 9.1.1 The land is virtually entirely permeable surface the majority being open pasture and grass underlayered with silt. The site is drained by uncontrolled discharge directly into the ground and to the IDB drain to the north of the site refer to plan in Appendix C.

10.0 SAFE EGRESS/ACCESS

- 10.1.1 The site will be registered with the Environment Agency Flood Line Warning Service prior to completion and safe procedure included in the site manual in the event of a flood event requiring emergency evacuation the route will be established on an incident by incident basis and persons withdrawn to. However the most likely open route will be the A17

11.0 Effect of the Proposal

11.1 Effect of the Proposal

- 11.1.1 The existing site of circa 4.5 ha is made up of pasture, grass runways and buildings. This is drained by uncontrolled run-off into soakaways the grass areas have no positive drainage.
- 11.1.2 The proposal is to retain the existing buildings and grasslands and build a new visitor area– an indicative layout is shown at Appendix B.
- 11.1.3 The application is for planning permission at this stage, a detailed drainage solution is not proposed as it suggests that a condition is applied to the approval which would require a detailed drainage solution to be approved before reserved consent is granted.
- 11.1.4 In principle, as the existing site consists of extensive permeable areas drainage with no positive drainage, it would not be unreasonable to expect a drainage scheme that retains run off within the site and discharge any run off into soakaways as this area is typically silt a percolation test will be required in order to design soakaways.
- 11.1.5 The NPPF seeks to provide post-development run off at greenfield rates. A further 30% should be added to projected run-offs to allow for climate change. The site area has sufficient areas to enable surface water to be contained within the site with no of site discharge, in accordance with guidance.
- 11.1.6 The effect of the proposal will be to neutral probability of flooding due to the nil run off from the site being achieved.

- 11.1.7 As the footprint is on existing permeable area there is no off site run off beyond agricultural rates. The proposed new impermeable area is to be drained into the new below ground a soakaway. A new soakaway as identified on plan in appendix G, this is to be designed to BRE Digest 365 and provided with storage to accommodate a 100 year storm plus 30% allowance for climate change. A percolation test is to be performed to approved standard procedures prior to completing the design and be submitted to the planning authority prior to commencement

12.0 Flood History

12.1 Flood History

- 12.1.1 From available information there does not appear to be any record of flooding to this site in recent years. The storm events in 2007 had no significant effect.

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

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

- 13.1.1 It is clear that the site is located in Zone 3 as identified in the EA data and the SFRA. The actual risk is identified as medium and its implication for the site should not prevent a planning application being approved.

14.0 Climate Change

14.1 Climate Change

- 14.1.1 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 any drainage system should have a 30% allowance for climate change.

15.0 Mitigation Measure

15.1 Mitigation Measures

- 15.1.1 Given the Zone 3 medium risk of the site there are no specific mitigation measures required apart from provision of an adequate drainage system.
- 15.1.2 It is recommended that the project proposals are drained, with roof water and clean areas being discharged to surface water attenuated drainage system discharging into the IDB piped yke to the north of the site refer to Appendix H. As there is medium risk of the site being flooded, there are no particular measures proposed after the management of surface water flows and compliance with Environment Agency standing advice.
- 15.1.3 The proposal is that the floor level be set no lower than existing floor level ie 3.457m ODN
- 15.1.4 Flood resilience techniques applied. The premises if not already are advised to register for the EA early warning service.

- 15.1.5 It is recommended that flood resilient construction techniques be adopted as stated in the guidance document 'Improving the Flood Performance of New Buildings – Flood Resilient Construction' by Communities and Local Government. Based on the documents guidance and projected flood level, it is understood this scheme should adopt a water entry strategy. On this basis, the development would adopt a number of the principles.
- 15.1.6 These would include concrete block construction with closed cell insulation for external walls (with sacrificial finishes), internal partitions are to be constructed from masonry with sacrificial finishes to height of 1125mm. Breaks and trim beads will be introduced into the wall finishes at 1125mm above floor level, this will separate the wall finished will prevent water damage permeating to higher levels.
- 15.1.7 Electric sockets, data points, dado trunking and any new mechanical services will be placed at a minimum of 1125mm above FFL where possible, and the feeds will drop from the ceiling voids. It is also proposed a brake in external finishes at approximately 1125mm above FFL in order to minimise flood damage to internal finishes on external walls above this level. If practical, ICT and data equipment will be lifted above the flood line.
- 14.1.7 Refuge, the entire first floor area of 850 square meters will provide refuge in the event of becoming trapped being over 2.0m higher than the 2115 projected flood level. See Appendix I

16.0 Pollution

16.1 Existing

The existing site is predominately open ground and hospital buildings and there is no anticipated significant pollution effects not already controlled by good practice.

16.2 Pollution Mitigation

16.2.1 Construction

16.2.2 Construction sequence, temporary bundage and settlement tanks should be considered and implemented during the works. Full reference should be made to PPG 6 Working on Construction and Demolition sites and Environmental Good Practice on Site 3rd Edition 2010.

16.2.3 The selection of a contractor to carry out the works must show consideration of the contractors proposals for pollution control during the works. A detailed spill action plan will be required to be put in place prior to construction.

16.2.4 Post Construction

16.2.5 Roof water and water from clean areas only will be allowed to enter the receptor.

16.2.6 Levels and Precautions

16.2.7 The design level of habitable accommodation will be set no lower than existing floor level to provide a suitable level operational ground floor.

16.2.8

16.2.9 Proposed Drainage: Clean and Dirty Water

16.2.10 The proposed drainage will be clean water drainage restricted to flows from roof and discharged to receptor.(Refer to Schematic Drainage Layout in Appendix G.)

16.2.11 Foul water will be dealt with via existing foul drainage connection.

17.0 Proposed Drainage

17.1 Proposed Drainage

17.1.1 It is our conclusion that the development complies with NPPF and passes, or is not required to pass, the sequential and exemption tests and should therefore be permitted with the condition of a detailed drainage scheme to be submitted for approval before of development.

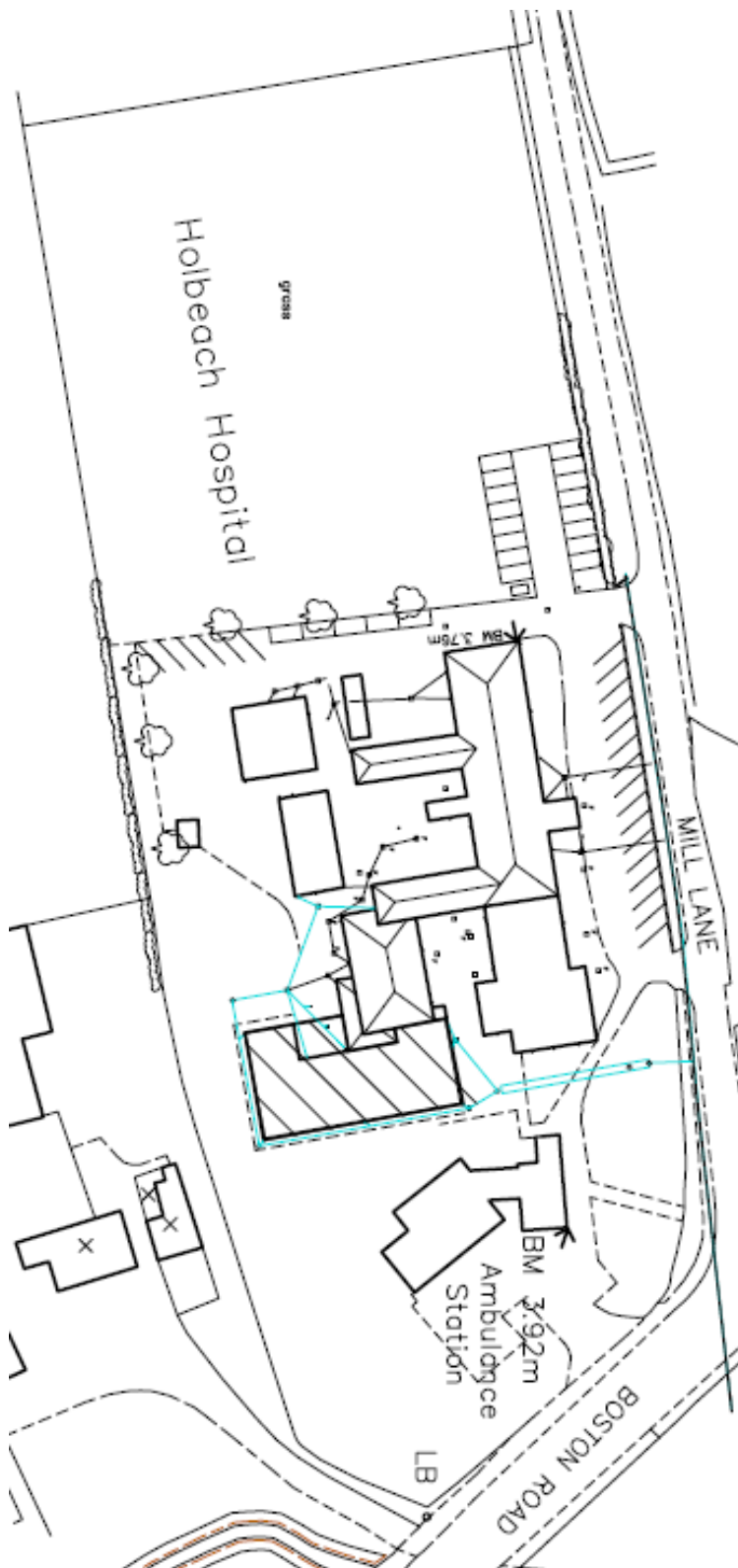
17.1.2 17.1.2 The proposal is to drain the new extension together with part of the existing building into new attenuated drainage system and ultimately into the piped IDB drain that runs West East on the Northern boundary of the site. A new collector pipe will run round the new extension and discharge into linier attenuation tank by turbosider and discharge via a pumped outlet to control the outfall rate to agricultural rates of 1.4l/s (to be agreed with IDB). A schematic scheme is shown in Appendix G

18.0 Conclusion

18.1 Conclusion

- 18.1.1 It is our conclusion that the development complies with NPPF and passes, or is not required to pass, the sequential and exemption tests and should therefore be permitted with the condition of a detailed drainage scheme to be submitted for approval before of development.

Appendix A



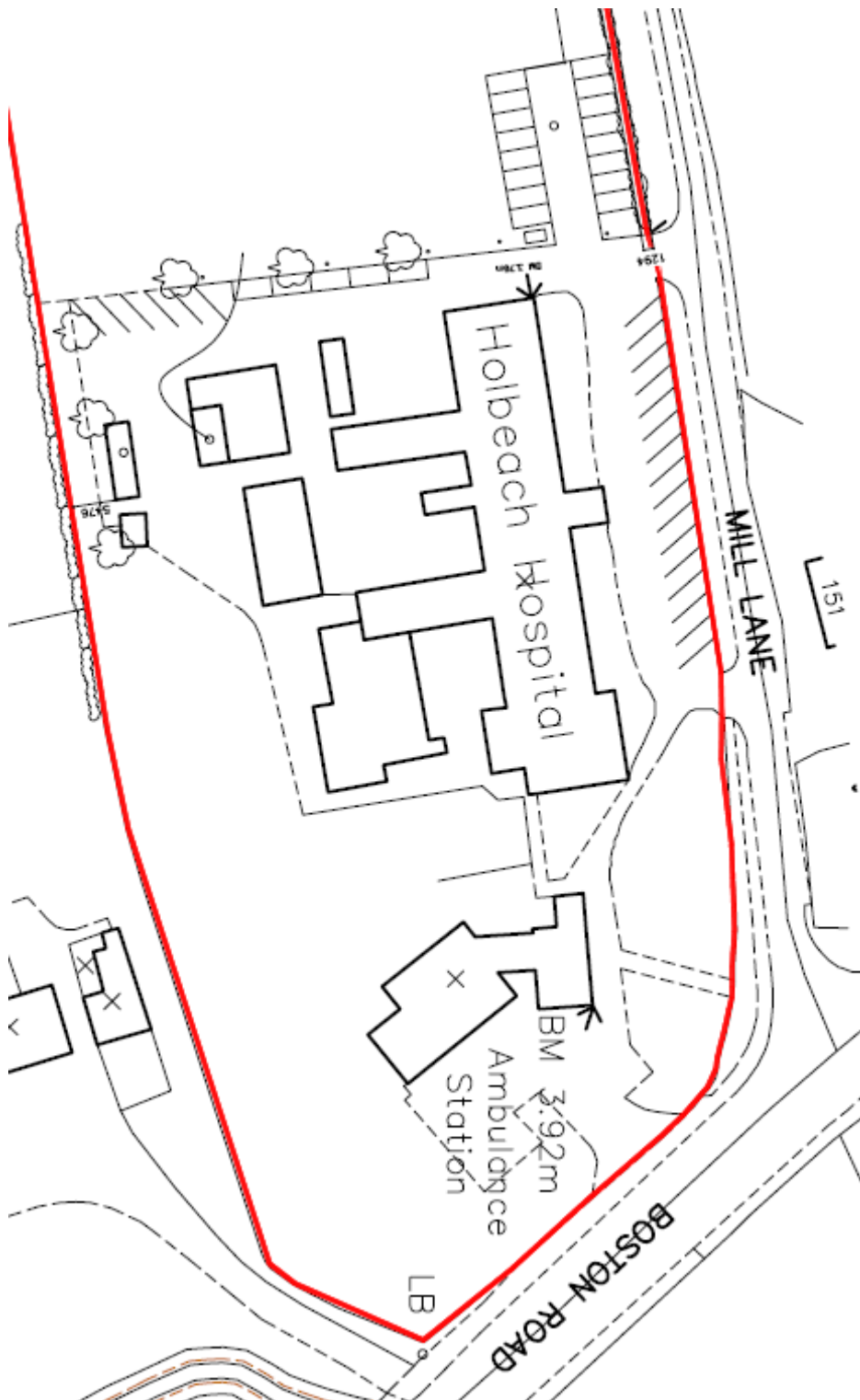
Site plan

Appendix B



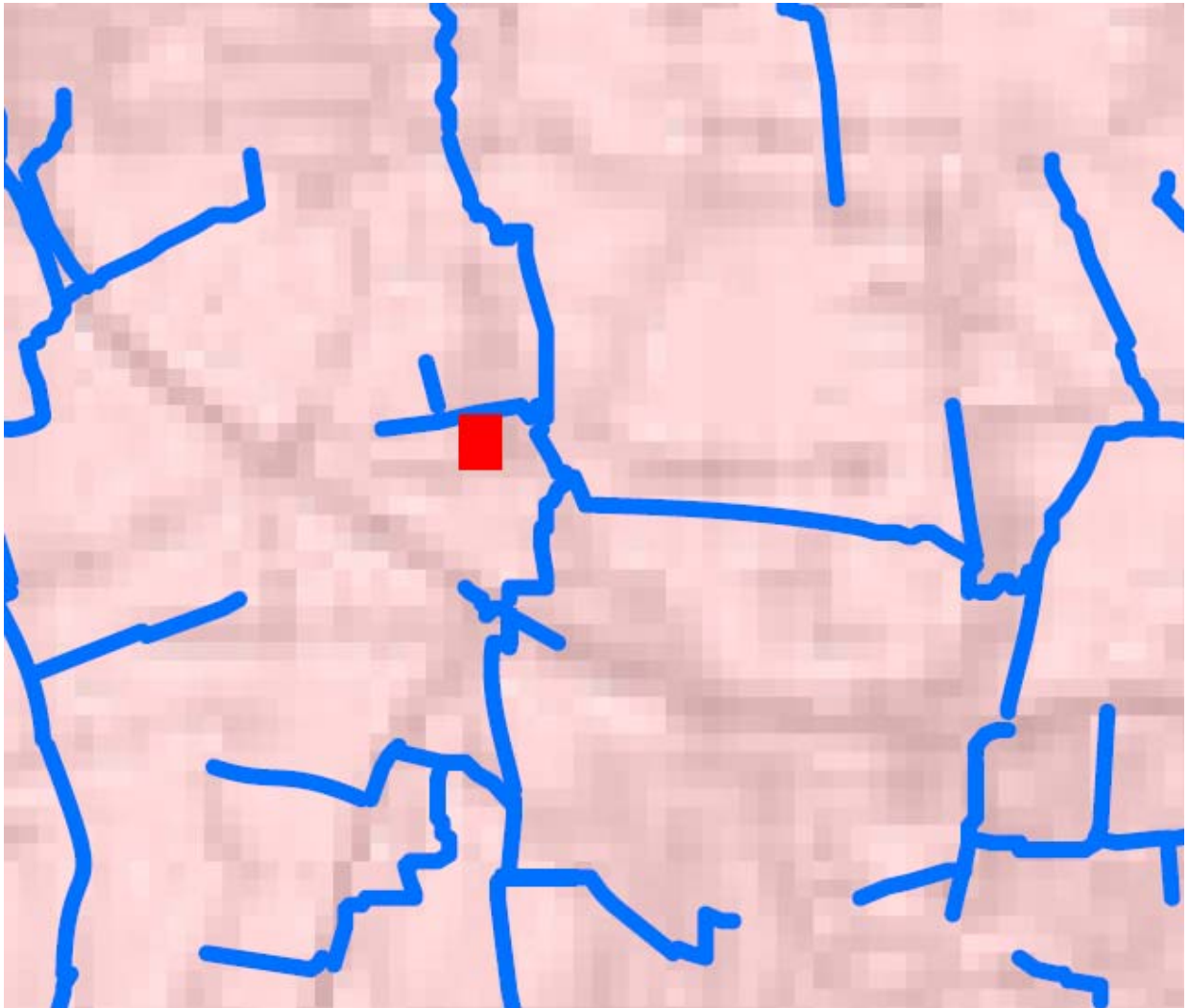
Proposed site layout

Appendix C



Existing Site Plan

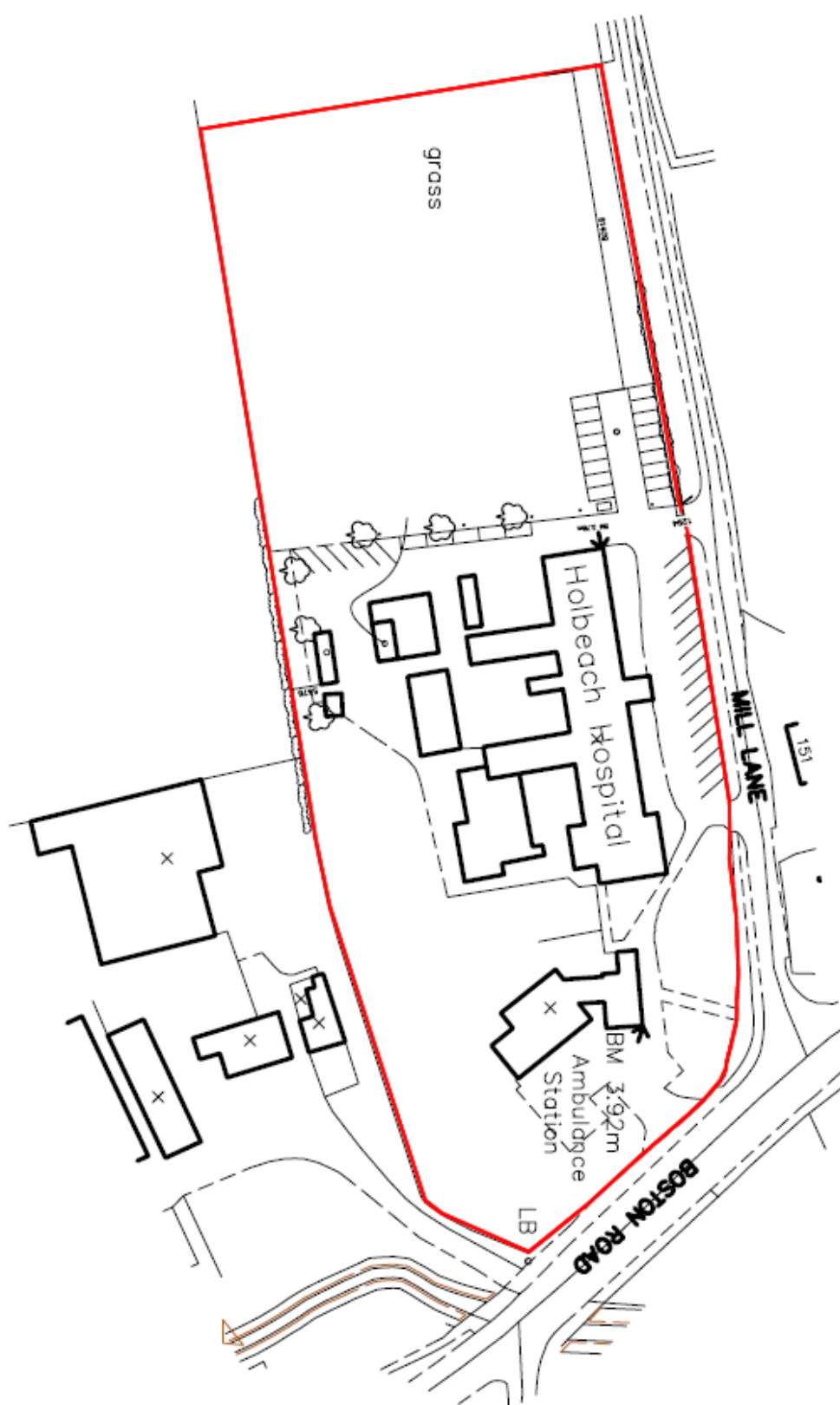
Appendix D



IDB Asset Map Red is Site Location

Appendix E

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Location Plan

Appendix F


**Environment
Agency**

March 2007

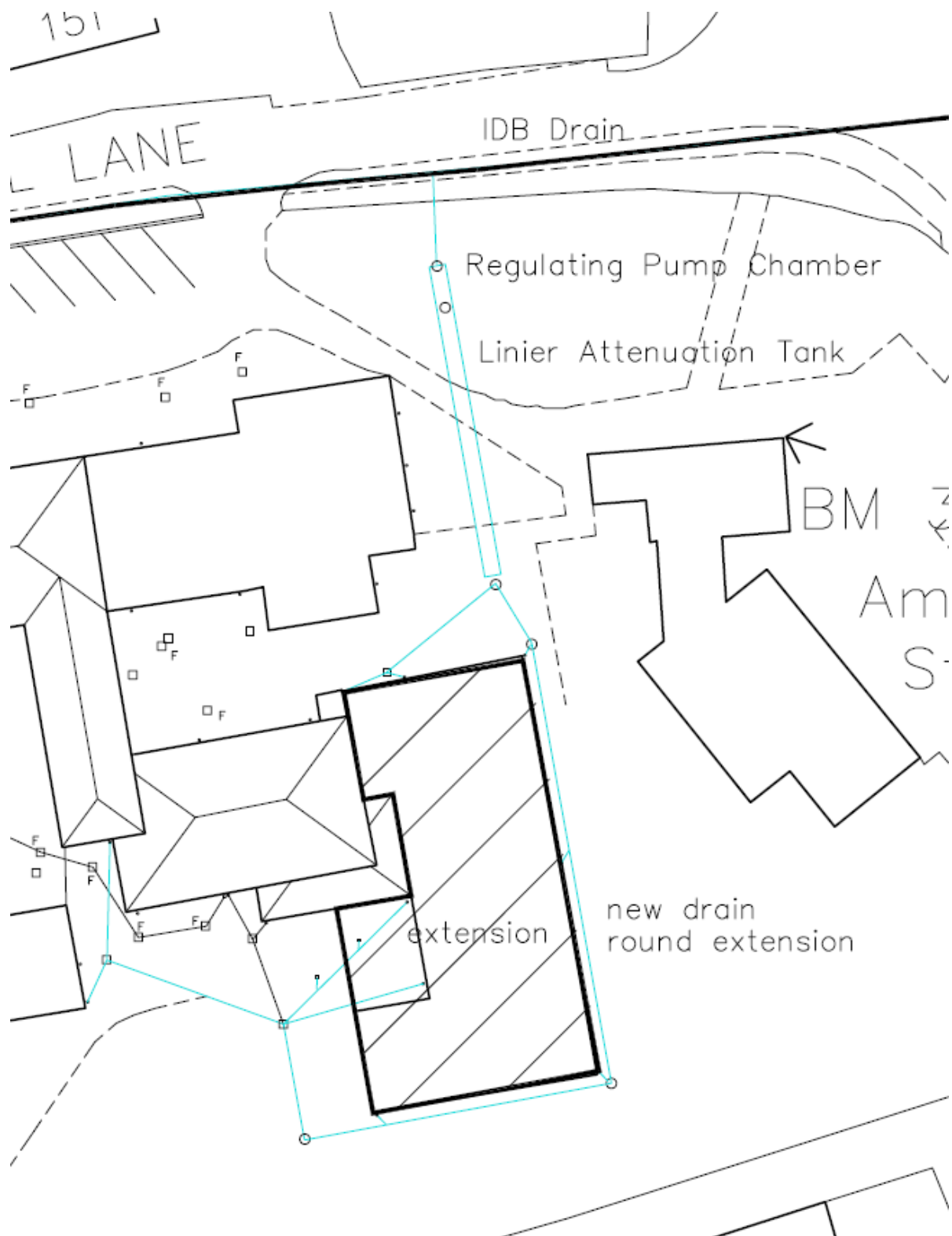
Development and flood risk: when to consult the Environment Agency

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 TO '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

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Development Flood Matrix

Appendix G



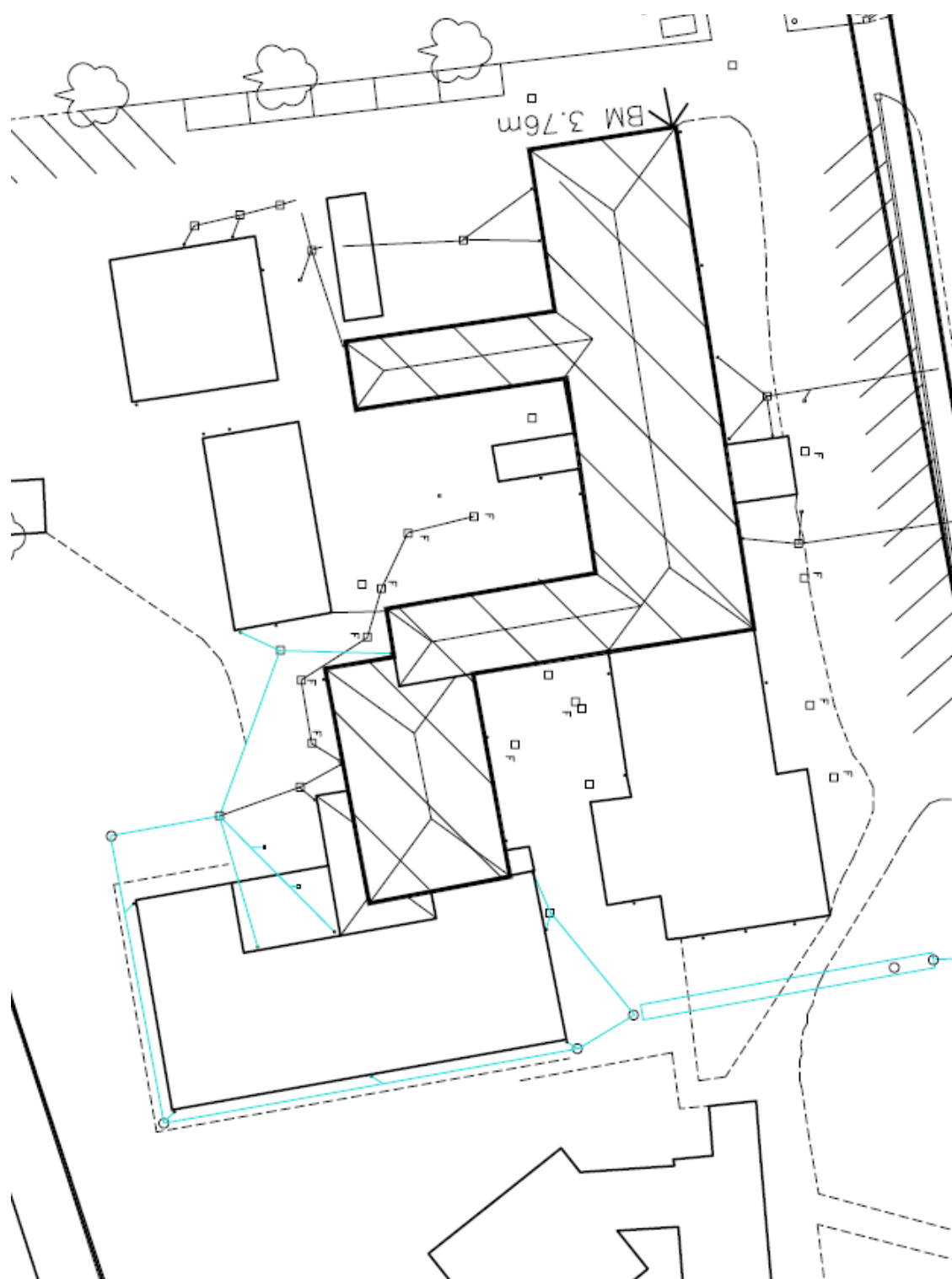
Schematic Drainage Layout

Appendix H



Residual Hazard 2055

Appendix I



First Floor Refuge Shaded Area