

Flood Risk Assessment

Address

Former Old Joiners Shop

Land to the East of 3 Canal Side West

Newport

East Yorkshire

Client

Gemini Consulting

Date

14th January 2023



East Riding Consultants Ltd

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Document Control

Revision	Remarks	Date
A	Preliminary	14/1/23
B	Minor revision to layout plan	16/2/23
C	Site address amended	7/3/23

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The client should make the planning application within 3 months of the above date.



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1. Introduction

East Riding Consultants Ltd has been commissioned to prepare a detailed flood risk assessment (FRA) for the proposed 4 fishing lodges adjacent to Market Weighton Canal.

A FRA is required because the proposed development is situated in Flood Risk Zone 3a, this means that local and national planning policy requires an assessment which identifies and examines flood risk at the site level that also sets out measures to reduce the risk of flooding to the development and its occupants over the life of the development.

This is a supplementary document to a planning application, the conditions of a planning consent are likely to make reference to this document which means the applicant must comply with specific requirements set out in this FRA and give proper consideration to its recommendations in order to discharge the conditions of the consent.

2. Methodology and Site Information

2.1 Scope of Works

This FRA will:

- Assess the risk of flooding to the development
- Set out specific requirements which the applicant must adhere to
- Set out recommendations that the applicant must properly consider

This FRA will not:

- Set out any detailed design
- Give detailed hydraulic calculations

3. Sources of Data

The following publications and data sources were used in the production of this report:

- *National Flood Risk Map for Planning – Rivers and Sea*
- *National Map for Risk of Flooding from Surface Water*
- *East Riding of Yorkshire Council Strategic Flood Risk Assessment (SFRA)*
- *East Riding of Yorkshire Flood Data Mapping*
- *National Planning Policy Framework (NPPF)*
- *NPPF Technical Guidance*
- *Flood Risk Assessments Guide for New Development (FD2320/TR2)*
- *Humber defence overtopping hazard and depth maps 2014: EA 2015*
- *Water level profile 2014: EA 2015*
- *Humber breach defence scenarios 2011: EA 2011*
- *Flood Risk Assessments – Climate Change Allowances: EA 2016*

3.1 Environment Agency Licence Information

Contains Environment Agency information © Environment Agency and database right.

3.2 Study Area

The study area considered will be Market Weighton Canal Catchment and the tidal Humber Estuary.

3.3 Location

The proposed development is located on Canal Side West, **6,518m** north-north east of the tidal Humber Estuary at Weighton Lock and adjacent to Market Weighton Canal.

The National Grid Reference for the site is **SE856302**

3.4 Description of Proposed Development

The proposal is for the construction of 4 residential fishing lodges.

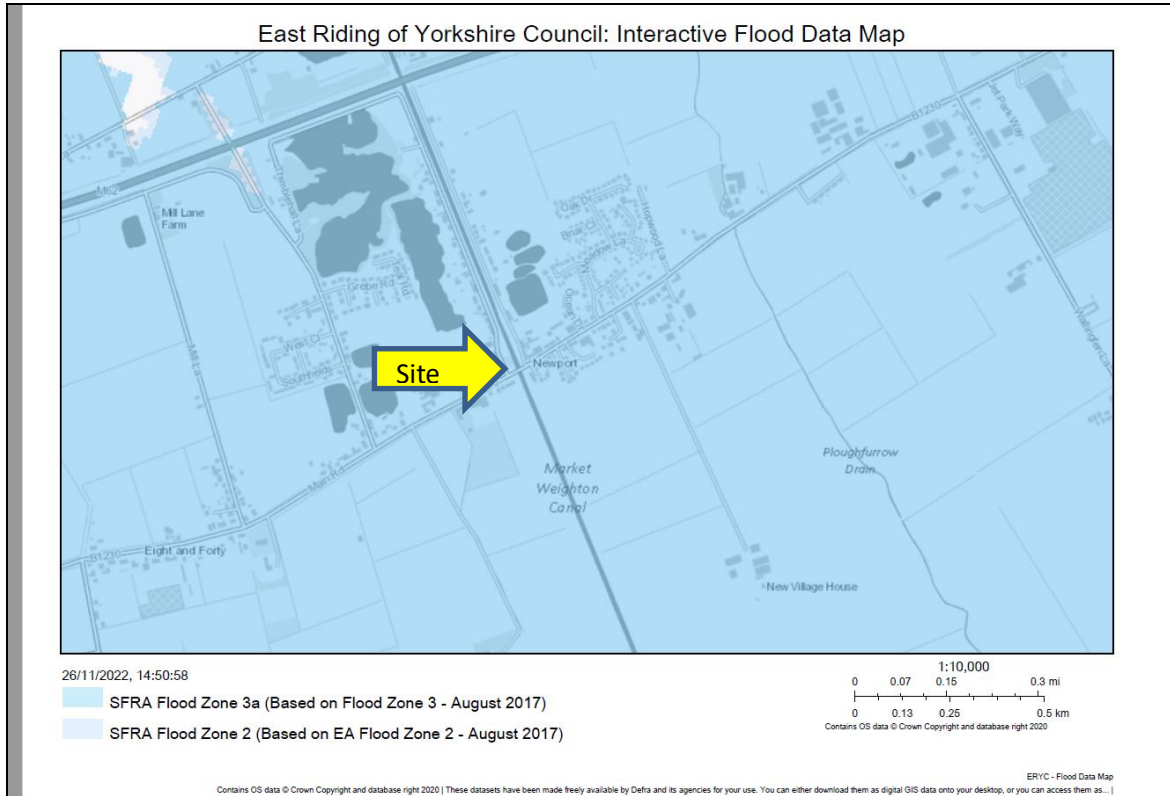
3.5 Topography

A topographical survey to Newlyn Ordnance Datum (mAOD) has been undertaken. The site falls from 3.140m AOD towards the Canal bank top at 2.350mAOD there is then a slop to the lower level of 0.470m. Water level in the canal was recorded at 0.200m AOD. The highway fronting the site varies from 2.740m AOD to 2.940m AOD and rises to the east to meet the bridge over the canal on the main road where the road level is 5.100mAOD.

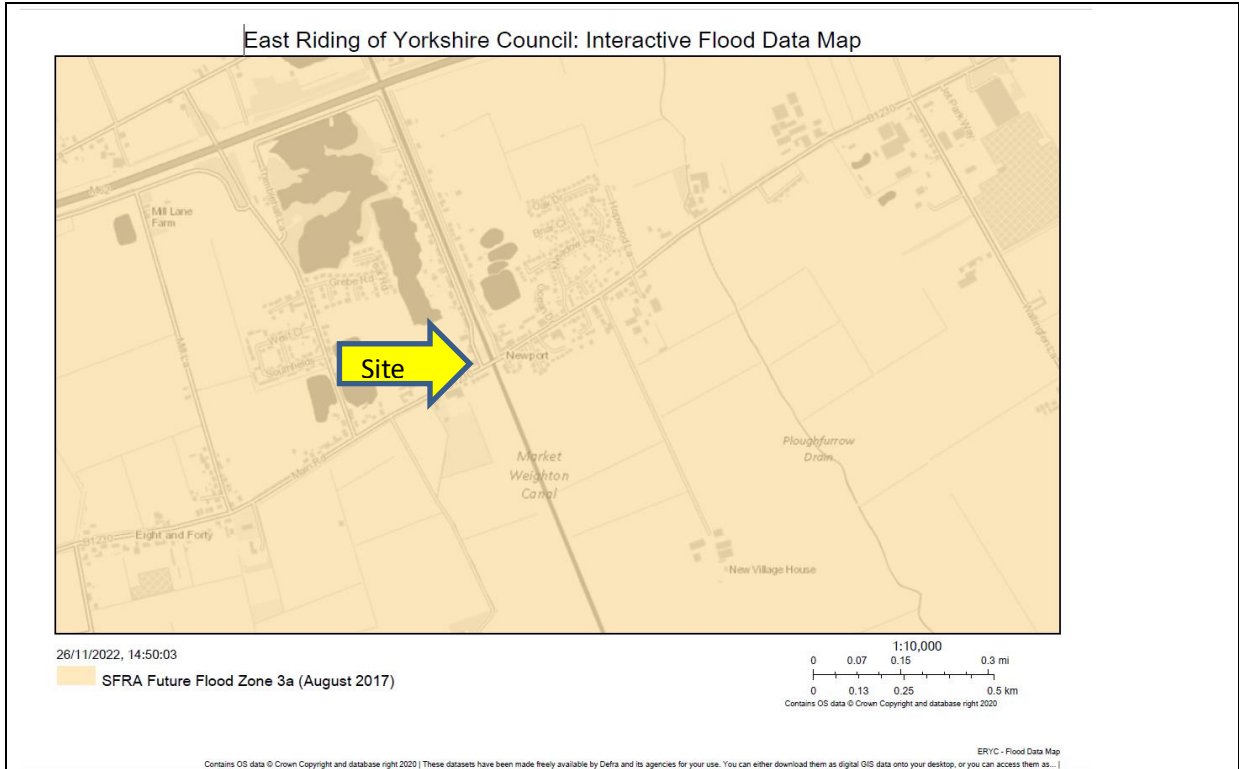


4. Flood Risk

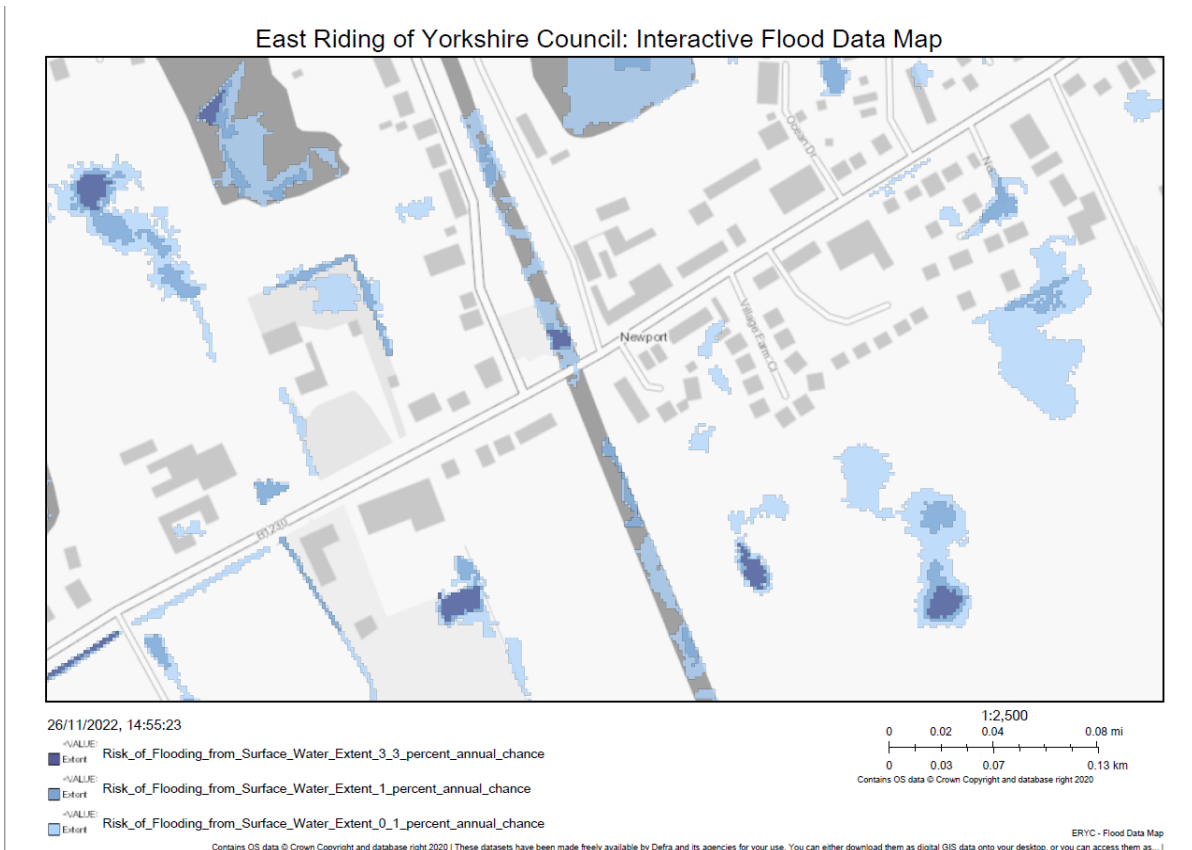
4.1 Flood Risk Maps



The East Riding of Yorkshire Flood Data Mapping confirms that the site is in flood zone 3a



The East Riding of Yorkshire Flood Data Mapping confirms that the site is in future flood zone 3a

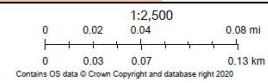


The East Riding of Yorkshire Flood Data Mapping confirms that the site is at very low risk of surface water flooding.

East Riding of Yorkshire Council: Interactive Flood Data Map



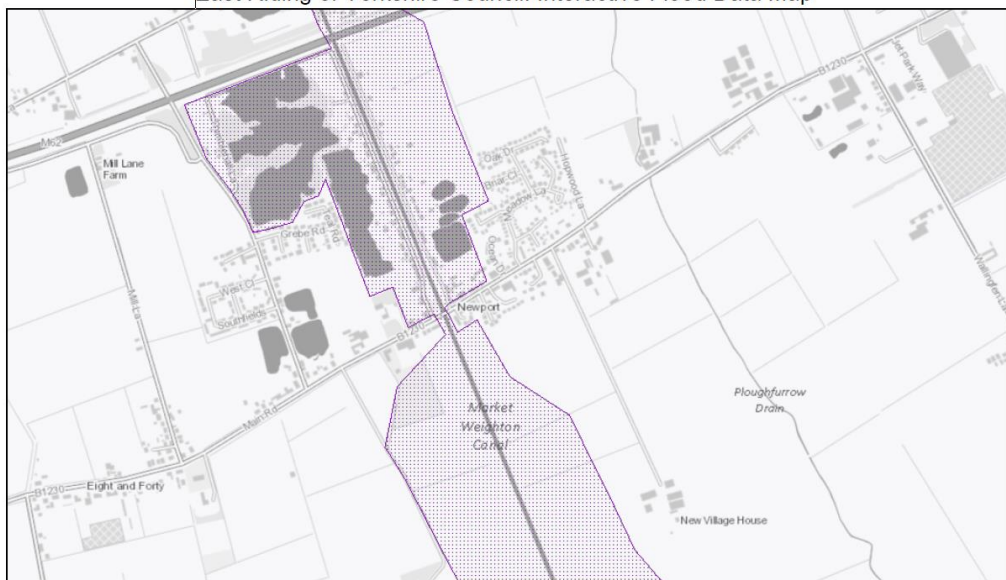
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Historic Flooding
June 2007



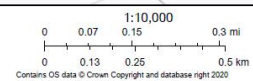
Contains OS data © Crown Copyright and database right 2020 | These datasets have been made freely available by Defra and its agencies for your use. You can either download them as digital GIS data onto your desktop, or you can access them as... | ERYC - Flood Data Map

The East Riding of Yorkshire Flood Data Mapping for Historic flooding confirms that the site has no historic records of flooding

East Riding of Yorkshire Council: Interactive Flood Data Map

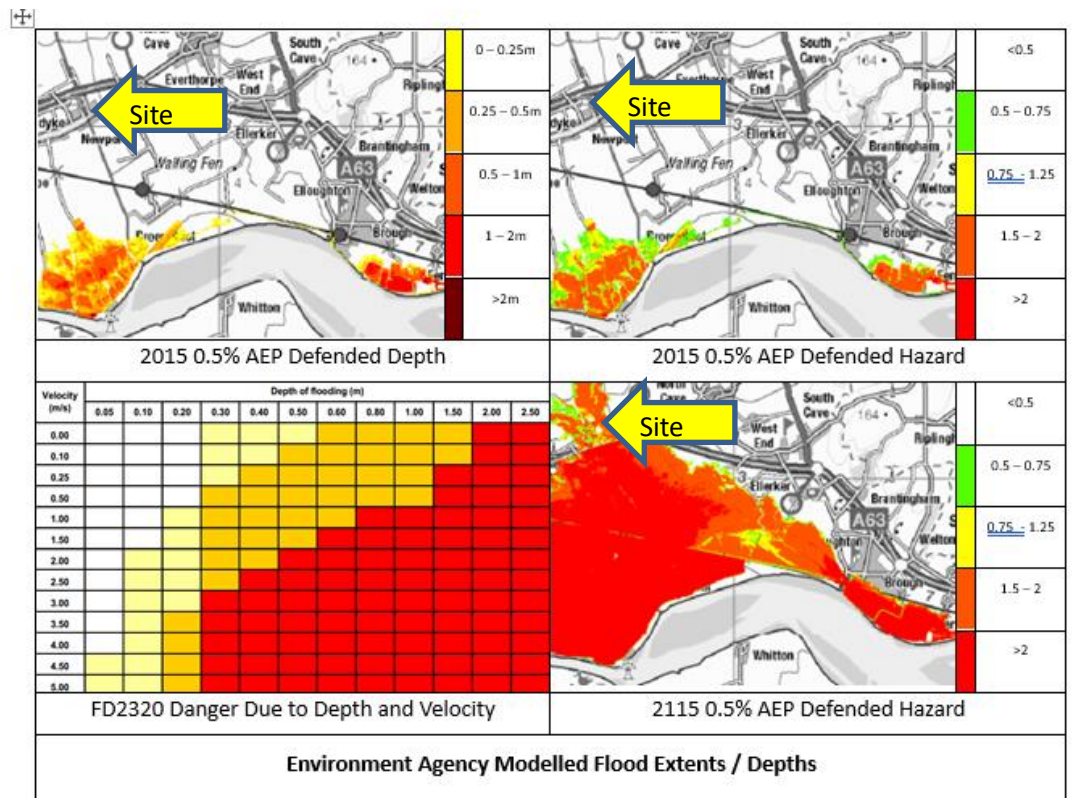


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The East Riding of Yorkshire Flood Data Mapping details the site is located within a flood warning area.



4.2 Flood Risk Map Commentary

The National flood risk map for planning – River and Sea concurs with the East Riding of Yorkshire Strategic Flood Risk Assessment flood data mapping as identifying the development in flood risk zone 3a. Presently the flood risk is fluviially dominated, however over the lifetime of the development the EA modelled data suggest the site shall become tidally dominated.

The National map for flood risk from surface water indicates that the development site is at a **very low risk** of flooding.

4.3 The Sequential and Exceptions Test

The LPA Supplementary Planning Document on the Sequential and Exception Test (SPD) advises the use of the proposed development is “More Vulnerable”.

- | | |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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.³⁰ and sites used for waste management facilities for hazardous waste • Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan. |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Figure 10 in the SPD shows which types of development should not be permitted. The SPD table shows these are Highly Vulnerable uses in Flood Zone 3a. A sequential and exception test is required for the More Vulnerable uses in Flood Zone 3a.

	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Flood Zone 1	Development is appropriate	Development is appropriate	Development is appropriate	Development is appropriate	Development is appropriate
Flood Zone 2	Development is appropriate	Exception test required	Development is appropriate	Development is appropriate	Development is appropriate
Flood Zone 3a	Exception test required ⁷	Development should not be permitted	Exception test required	Development is appropriate	Development is appropriate
Flood Zone 3b	Exception test required ⁸	Development should not be permitted	Development should not be permitted	Development should not be permitted	Development is appropriate

The SPD advises that for the Sequential Test an area of search should be established, the planning practice guidance which is referenced in the SPD defines the area of search to be over a geographic area defined by local circumstances, referenced below.

Policy S3 of the Local Plan “Focusing Development” makes it clear that new development will be supported on land within the development limits of Newport.

Section 5.12 of the Local Plan recognises that Newport is classed as a Rural service Centre completely within flood zone 3a. The same section states: *“Housing may be appropriate if it can be delivered safely in accordance with policy ENV6”*. This FRA sets out the management of flood risk as prescribed in ENV6 - Section B through D.

Section 3.8 of the SPD states that the area of search should be related to the type, scale, size, nature and character of the proposed development and should be agreed with the Council (case officer) on a case-by-case basis.

Based on the information given above, combined with the type, scale, size, nature and character of the proposed development, it is proposed that the search area is within the development limits of the village. As can be seen in the Flood Zone Map, no part of the village is at a lower level of flood risk than the proposed development.

5. Exception Test

5.1 Flood Risk

This FRA is prepared so to demonstrate the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

5.2 Sustainability

This development offers wider sustainability benefits as it is a redevelopment of a brownfield site.

With reference to Primary Villages (of which Tickton is one) Section 5.11 of the Local Plan states that *“the policy recognises their basic sustainability credentials and promotes an approach which would increase the current number of dwellings by 10%”*, analysis of the planning lists since the adoption of the local plan suggest this target has not yet been reached.

The ERYC planning note on flood risk advises that this is a minor development that is exempt from the sequential and exceptions test as it a redevelopment of buildings (taken to mean the footprint in this case) and also that in the case of redeveloped buildings a “sequential test is not required provided they do not increase that net footprint of the building”.

The PPS25 practice guidance (whilst superseded, this is the guidance upon which the current SFRA is based) also advises that *“where there is the redevelopment of an existing property, consideration of alternative sites is not considered to be a realistic option”*.

The NPPF advises that *“decisions should encourage”* “reusing land that has previously been developed”.

6. Detailed Analysis of Flood Risk

6.1 Tidal or Sea Flooding due to Failure of Flood Defences

The **0.5% Annual Exceedance Probability (AEP)** event including climate change gives a sea level of **7.099mAOD** in **2117**. The height of the existing defences to the side of Weighton Lock (which is a raised structure) are around **5.8mAOD**.

The local flood plain is around **2mAOD** this means that a breach would result in a flood depth of **3.8m** at the defence. Using the simple method, the lookup tables in FD2320 suggest there is no danger from breach at the development. This concurs with the SFRA maps.

6.2 Tidal or Sea Flooding due to Overtopping of Flood Defences

The **0.5% AEP** event including climate change gives a sea level of **7.099mAOD** in **2117**. The height of the existing defences to the side of Weighton Lock (which is a raised structure) are around **5.8mAOD**.

During the **0.5% AEP** event in **2117** this means that **1.288m** of water will crest over the existing defences. The detailed model data produced by the EA suggests some flooding will occur at the site, although this event is only likely to occur towards the end of the life of the development.

6.3 Flooding from Rivers and Large Watercourses (Fluvial Flooding)

The Market Weighton Canal is no longer a navigable waterway, it is the terminal watercourse for an extensive board managed level drainage system, the River Foulness and to a lesser degree the Weighton Beck. Discharge from the Weighton Beck is controlled by a flow control device at the Market Weighton reservoir structure by the EA.

The only likely mechanism for fluvial flooding from the canal is if the total rainfall volume for the Internal Drainage District exceeds the discharge volume at the Weighton Lock over the event duration.

6.4 Flooding from Surface Water (Pluvial Flooding)

The national map for surface water flooding indicates this site at low risk

No other significant local sources of flooding are identified.

6.5 Flooding from Groundwater

The site is situated in an area where there are substantial superficial deposits of either natural (fluvial) laminated sand and clay or man-made 'warp' above mud-stone bedrock.

Groundwater flooding is not considered to be a risk in this area.

6.6 Flooding from other Local Sources

There are no other significant risks from other local sources identified.

6.7 Flooding from the Development Site Itself

This is redevelopment of an existing property within the same foot-print that is remote from other properties therefore there is no increased risk of flooding.

7. Conclusion

Analysis suggests that the most significant risk is due to overtopping of existing defences at the end of the lifetime of the development.

7.1 Finished Floor Level (FFL)

In order to comply with the SFRA the FFL should be a minimum of **2.76mAOD** which is **600mm** above the adjacent highway level with a further **300mm** of flood proofing to a level of **3.06mAOD**.

7.2 Flood Proofing and Protection Measures

Flood protection and flood proofing measures at the property level must be included to comply with the Strategic Flood Risk Assessment. In the first instance the applicant should refer to the following publications:

- www.kitemark.com/products-and-services/building/flood-protection.php
- www.bluepages.org.uk
- www.communities.gov.uk/publications/planningandbuilding/improvingflood
www.ciria.com/flooding

The following measures are required:

- *The installation of flood doors and flood protection measures to BS1: PAS 1188 on vents and apertures below **300mm** above FFL.*
- *The installation of shower trays or wet rooms where the drain point is close to the FFL should be avoided; otherwise wastepipes should include inline non return valves.*
- *All floors should be solid with appropriate waterproofing between oversight concrete and internal floors.*

- *Use cement, lime and aggregate plaster on all ground floor internal walls. A premixed dry product such as “Tarmac Limelite” or similar approved should be used. Walls should be backed and skimmed with a lime plaster product and not be dry lined. Dry lined partition walls should be avoided on the ground floor, use aerated concrete blocks such as “Thermalite” or similar approved product for partitions.*
- *Incoming utility supply pipes and cables should be terminated (with master switches and valves) at least **300mm** above FFL with all pipes and ducting sealed at entry points with flexible duct sealants. Internal electrical distribution systems and sockets should be wired down from the ceiling and sited at least **300mm** above FFL.*
- *Do not use composite materials such as MDF and chipboard in downstairs construction including staircases, only solid treated constructional timbers should be used. Avoid composite floor coverings or natural wood floor coverings such as parquet in kitchens and bathrooms, use ceramic tiles instead.*

7.3 Place of Safety and Means of Escape (MoE)

The Environment Agency in their consultation response dated 1st August 2016 Ref RA/2016/134971/01-Lo1 State that there should be no ground floor sleeping accommodation. With the floor level now raised to 600mm above adjacent road level and flood proofing being undertaken for a further 300mm this should overcome their objection. Failure to do this would be inconsistent with other approved applications located within Flood Zone 3 where ground floor sleeping has been allowed provided there is internal access to a place of safety.

The applicant has proposed a mezzanine floor as a place of safety in the event of flood. This will be **5.3mAOD**. The design must include a MoE at that level without the requirement to egress through the ground floor. The MoE window should be designed to **Part B1 2.8(a)** of the building regulations. The first floor must be accessible at all times by suitable means.

A fixed staircase is preferred and this should be designed in accordance with **Part K1** of the building regulations. Alternatively a retractable stair/ladder may be used, although there is no specific provision in the building regulations the designer should ensure any product meets the following specifications:

- Be manufactured to **EN14975**
- One person must be able to deploy the stair/ladder from the ground floor
- The product must incorporate hand railing

7.4 Flood Emergency

Upon receiving news of a breach, it is recommended that the occupant moves immediately to the first floor. In other circumstances evacuation should be considered based on advice from the authorities.

It is important to consider evacuation routes in the event of a flood. The site is located in a large low lying area, most of which is subject to flood risk. The applicant should examine



local routes and topography and consider the most appropriate route for evacuation so the occupant is not directed toward the flood or a 'dry island' but to safe dry land above the maximum flood or breach level.

Residents should sign up to the Environment Agency Flood Warning Service, more details can be found here:

- <https://fwd.environment-agency.gov.uk>

Upon commissioning the development the applicant should supply the occupant with a flood emergency plan.