

Flood Risk Assessment

Address Proposed Offices
Main Street
Paull

Client Integra Buildings

Date 21 May 2017



East Riding Consultants Ltd

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Document Control

Revision	Remarks	Date
A	Preliminary	21 May 2017

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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 proposed new offices at Main Street, Paull

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 refer 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. Policies

2.1 *National and Local Planning Policy*

This FRA complies with the requirements set out in paragraph 9 of the Technical Guide to the National Planning Policy Framework and the East Riding of Yorkshire Council Strategic Flood Risk Assessment (2010). It clearly considers:

- How people will be kept safe from flood hazards identified
- The effect of a range of flooding events including extreme events on people and property

3. Methodology

3.1 *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

4. Sources of Data and Site Information

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)*
- *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*

4.1 Licence Information

Contains Environment Agency information © Environment Agency and database right.
Contains OS data © Crown copyright and database right 2017.

4.2 Study Area

The study area considered will be South Holderness Levels Catchment Area and the tidal Humber Estuary.

4.3 Location

The site is located to the immediate north village of Paull. The site is located **551m** east of the tidal Humber Estuary.

The National Grid Reference for the site is **TA 171 266**.



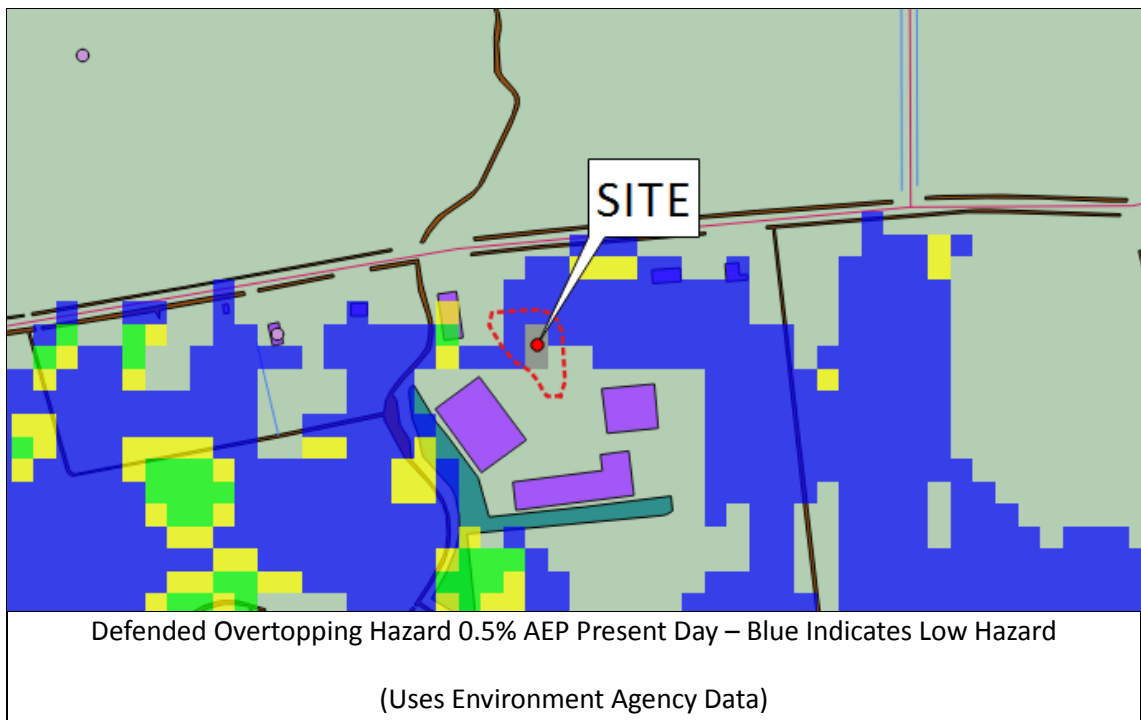
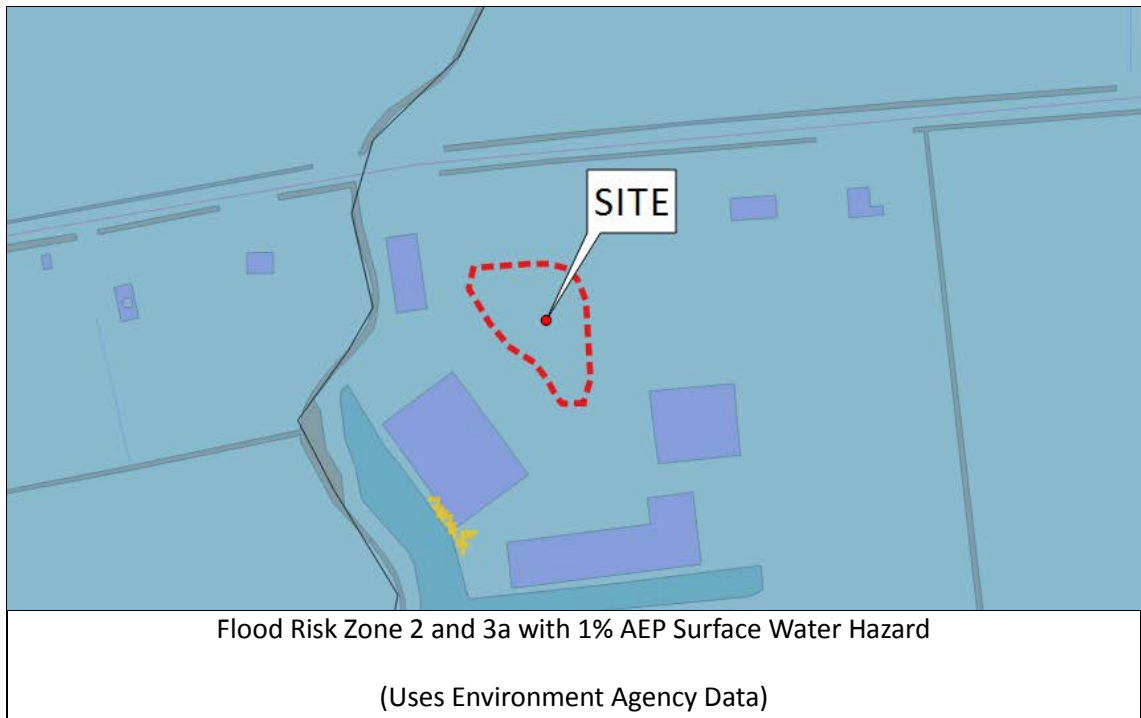
4.4 Description of Proposed Development

The proposal is for a new 2 storey office building.

4.5 Topography

A topographical survey to Newlyn Ordnance Datum (mAOD) has been undertaken. The average site level is around **2.3mAOD**, the adjacent highway level is **2.470mAOD**.

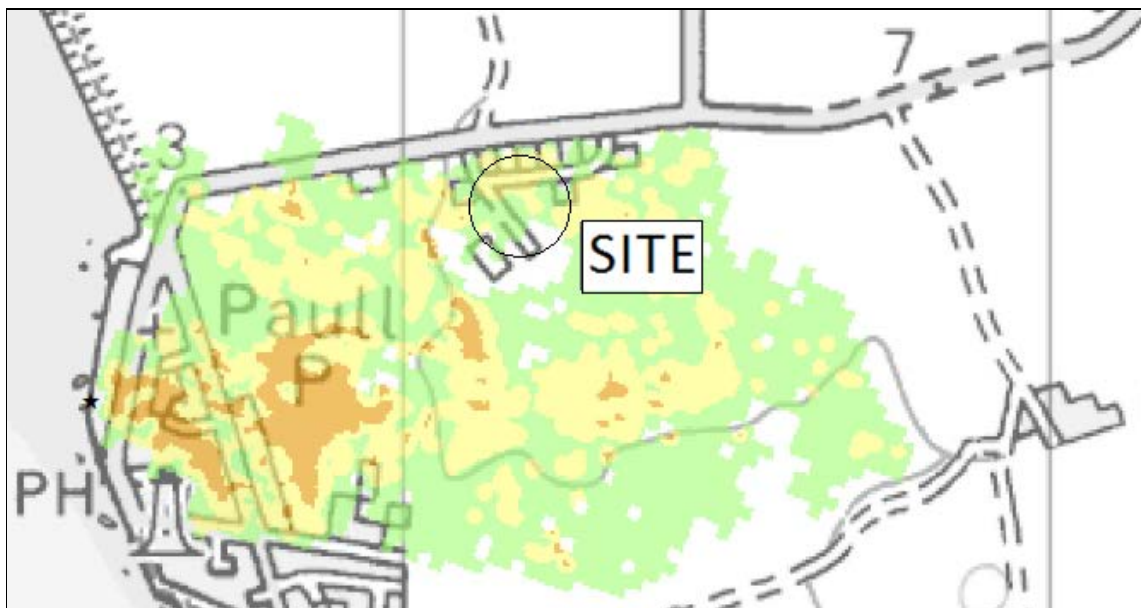
5. Flood Risk Maps





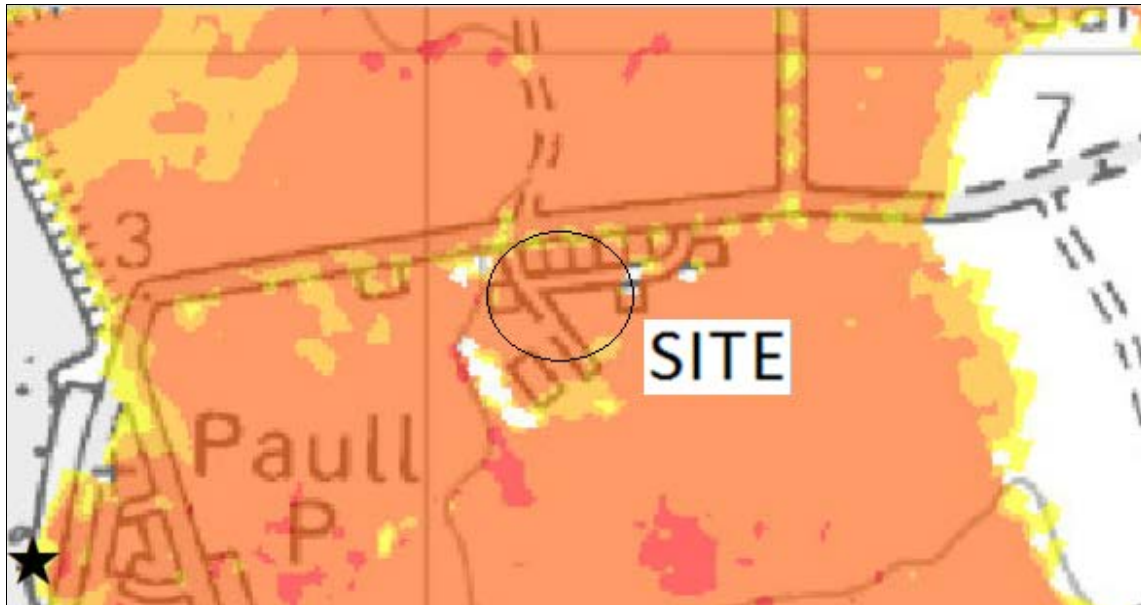
Defended Overtopping Hazard 0.5% AEP With Climate Change – Red Indicates High Hazard

(Uses Environment Agency Data)



Breach Hazard Present Day – Yellow / Green Indicates Low Hazard

(Uses Environment Agency Data)



Breach Hazard with Climate Change– Orange / Red Indicate Medium / Hazard

(Uses Environment Agency Data)

5.1 Flood Risk Map Commentary

The National flood risk map for planning – Rivers and Sea concurs with the East Riding of Yorkshire Strategic Flood Risk Assessment as identifying the development in flood risk zone 3a.

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

5.2 The Sequential Test

Because the development is classified as “*less vulnerable*” and there is a medium probability of flooding presently the development may be permitted. There are no other sites locally at less flood risk. The only allocation for this type of development locally is large Paull LDO site which has a same flood risk than this site, as the sequential test specifically requires a search is undertaken for sites at less flood risk, sequentially this site is appropriate.

5.3 The Exceptions Test

This development has high sustainability benefits as it brings much need jobs to the local economy, this is consistent with LPA policy for this area. It is situated immediately adjacent to the Paull Local Enterprise Zone which has been identified for jobs and growth creation.

This site-specific flood risk assessment will go on to demonstrate that the development will be made 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.

6. Detailed Analysis of Flood Risk

6.1 Tidal or Sea Flooding due to Failure of Flood Defences

The latest EA modelling data suggests that this site will flood during a breach. Presently the depth and velocity of a breach shall present little danger to the building and its occupants, however this danger will increase over the lifetime of the development.

6.2 Tidal or Sea Flooding due to Overtopping of Flood Defences

The latest EA modelling data suggests that this site will flood due to overtopping. Presently the depth and velocity of a breach shall present little danger to the building and its occupants, however this danger will increase over the lifetime of the development.

It is worth noting that the height of the Paull Defences is currently being increased, this will significantly reduce the risk due to overtopping over the lifetime of the development.

6.3 Flooding from local watercourses

This area relies heavily on a local land drainage system, which in turn relies on free discharge to the Humber Estuary.

Flooding from watercourses in this area is most likely to occur following a large winter rainfall event that is preceded by unfavourable antecedent conditions e.g. a very wet winter. This was seen in 2000 and 2007 in this area. It is not known if this site flooded.

In a fluvial event, flooding is likely to occur first on the slightly lower land to the west, eventually causing low level issues as the proposed development site.

6.4 Flooding from Surface Water (Pluvial Flooding)

Data published by the Environment Agency in their national map for surface water flooding product indicates the entire site to be at **very low risk**. This means that there is less than a **1 in 1,000 (0.1%AEP)** chance risk of flood hazard at this site.

6.5 Flooding from Groundwater

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

As this development is proposed in the footprint of existing hard standing there is no increased surface water runoff due to increased impermeable area. There are opportunities to reduce flood risk by introducing planting and impermeable surfaces.

7. Conclusion

With the construction of new defences at Paull the most significant risk is likely to be tidal overtopping towards the end of the life of the development.

7.1 Finished Floor Level (FFL)

To comply with the SFRA the FFL shall be **600mm** above the adjacent highway level of 2.470m resulting in a **FFL of 3.070m AOD**, with a further **300mm** of flood proofing.

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 BSI: 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 **600mm** 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.*
- *Please note that it is not recommended that a building is made ‘watertight’ above **600mm** from FFL as structural damage may occur, a building is better designed to allow water to flow through above this level.*

7.3 Place of Safety

As the development is for a 2-storey building, the place of safety shall be the first floor.

7.4 Flood Emergency

The Business should consider a flood emergency plan and sign up to the National Flood Warning Service, more details can be found here:

- <https://flood-warning-information.service.gov.uk/>

Report Ends