



Technical note

Project:	Land at Harecroft Farm, Wisbech	To:	
Subject:	Flood Risk Measures	From:	Atkins
Date:	22 Nov 2013	cc:	

Introduction

Atkins has been commissioned by the Church Commissioners for England (CCfE) to undertake investigations associated with land at Harecroft Farm, Wisbech to identify flood risk and drainage constraints which could affect the future development of the CCfE's site. This document is intended to provide evidence to support the answer to *Matter 8 – Wisbech (Policy CS8) question 4: Will the development of West Wisbech be a viable option given flood risk considerations?* The responses are specific to the CCfE's site.

This technical note has been prepared with reference to the National Planning Policy Framework (NPPF)¹ and associated Technical Guidance², and in consultation with the Environment Agency, Cambridgeshire County Council, Fenland District Council, North Level Internal Drainage Board (IDB) and the Association of British Insurers (ABI). Various on-line resources available in the public domain have also been referred to including MAGIC³, the British Geological Survey⁴ and Soilscales⁵.

A number of documents related to development policy and flood risk in Wisbech and the surrounding area have also been reviewed as part of this study. The documents are:

- Fenland Local Plan Core Strategy⁶
- Cambridgeshire Preliminary Flood Risk Assessment (PFRA)⁷
- Cambridgeshire Local Flood Risk Management Strategy⁸
- Fenland District Council Level 1 Strategic Flood Risk Assessment⁹
- Wisbech Level 2 Strategic Flood Risk Assessment¹⁰
- Fenland District Council Flood Risk Sequential and Exception Tests¹¹

Flood Risk

Flood risk in Wisbech is due to the local topography and the number of potential flood risk sources. Based on available information, the following sources are considered likely to contribute to flood risk in the vicinity of West Wisbech and specifically, the land owned by the CCfE:

- Fluvial
- Tidal
- Overland flow
- Sewers

¹ National Planning Policy Framework, March 2012, Department for Communities & Local Government.

² Technical Guidance to the National Planning Policy Framework, March 2012, Department for Communities & Local Government.

³ MAGIC, www.magic.gov.uk

⁴ British Geological Survey, www.bgs.ac.uk

⁵ Soilscales, www.landis.org.uk/soilscales

⁶ Fenland Local Plan Core Strategy, September 2013, Fenland District Council

⁷ Cambridgeshire Preliminary Flood Risk Assessment, Hyder Consulting, March 2011

⁸ Cambridgeshire's Local Flood Risk Management Strategy 2013 – 2015 (V0.13), March 2013, Cambridgeshire County Council

⁹ Fenland District Council Level 1 Strategic Flood Risk Assessment, Scott Wilson, July 2011

¹⁰ Wisbech Level 2 Strategic Flood Risk Assessment, WSP, June 2012

¹¹ Flood Risk Sequential and Exception Tests Evidence Report, Fenland District Council, September 2013

Technical note

Groundwater flooding, due to the underlying soils and geology, does not present a significant flood risk, and there are no records of groundwater flooding¹⁰. 'Artificial sources' include flooding from impounded water bodies and the flooding that could occur as a result of infrastructure failure does not present a flood risk as there are no impounded water bodies in the vicinity of the proposed development site.

Fluvial & Tidal

The River Nene has a series of raised defences along its length to protect the surrounding low lying areas from flooding. According to the Environment Agency Flood Map, the proposed development site is located within Flood Zone 3. There are defences protecting the site from the River Nene. The defences were originally built in the 1980s to provide protection from up to a 1 in 200-year flood event. Additional statistical rainfall and flood data including information on the impact of climate change has become available since the defences were originally built which has revised the characteristics of the 1 in 200-year event. The Environment Agency are therefore progressively upgrading/replacing the River Nene defences through Wisbech to maintain protection against a 1 in 200-year flood event¹⁰. The first phase of this work was completed in 2010 hence the defences currently provide a 1 in 200-year standard of protection. Two further phases of raising the defence levels are planned for 2025 and 2045 to ensure that the 1 in 200-year standard of protection is maintained in line with predicted increases in flood flows and rises in sea levels over the next 50 years as a result of climate change. A proactive maintenance system has also been implemented to ensure that the defences remain fit for purpose.

It can be concluded that the proposed development site is currently protected by the upgraded flood defences and will continue to be so until at least the mid to late 21st century.

The residual risk of flooding in the event of a breach in the River Nene defences has been investigated. The maintenance system that has been implemented mitigates this risk and therefore breach is deemed to be unlikely. The protection of life is the primary requirement during such an unlikely event hence the safe access and egress of the site will be incorporated in the design of the development.

The IDB maintain the drainage network, both the mechanical elements and the channels to maintain flow capacity and storage volume. As a result, the risk of flooding of the on-site watercourse is mitigated with flood risk management measures.

Overland flow (Pluvial)

There are no reports of pluvial flooding in this area. The Wisbech Strategic Flood Risk Assessment (SFRA)¹⁰ provides a flood map for Surface Water for a 1 in 200year event which shows localised ponding sporadically across the site. This is not deemed to be significant. The light coloured purple represents a depth of 0.1-0.3m and the dark coloured purple represents a depth of greater than 0.3m.

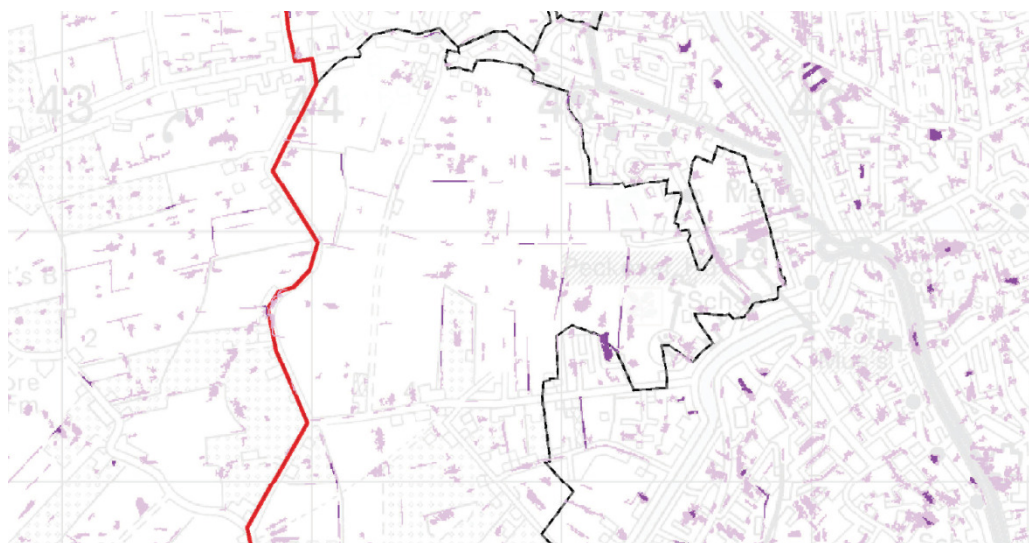


Figure 1. Extract from "Flood Map for Surface Water, 200 Year Event, 1501-G-1.2"¹⁰

Technical note

Sewers

Information is currently awaited from Anglian Water regarding the local sewerage systems (foul and surface).

Sequential & Exception Test

The location of the proposed development within defended Flood Zone 3 means that the Sequential Test must be applied to the site. Fenland District Council has undertaken both a Sequential and Exception Test for the area including the site. These have both been passed and have been accepted by the Environment Agency.

Surface Water Drainage – Proposed Development

The surface water drainage system for the proposed development will ensure that water is managed wholly within the site and does not adversely affect any areas beyond the site boundary.

The outfalls from the proposed surface water system will be into the local drainage network owned and operated by the IDB. The discharge rates into this system will be agreed with the IDB. To date, the IDB has advised that the post-development flow rate into their drainage ditches must be limited to the greenfield equivalent rate of 1.4l/s/ha for all rainfall events up to and including the 1 in 100-year +30% event.

Based on the above discharge limit and assuming the proposed development site will become 50% impermeable (based on the total site area), the required surface water storage volume is approximately 11,100m³. This can be accommodated within the development masterplan.

The proposed drainage system will incorporate sustainable drainage systems (SuDS) features. These will be incorporated into the landscaping scheme, providing storage, water quality enhancements, biodiversity and habitat creation benefits. SuDS systems will be selected in accordance with industry best practice as advised in CIRIA C697 "The SuDS Manual"¹² and will be appropriate for site conditions.

Viability

Affordable insurance against flooding may affect the viability of new developments. A new insurance scheme, Flood Re, is currently being prepared by the ABI¹³ and the Government to ensure that flood insurance can be obtained by householders and businesses. The ABI have been consulted and have advised that for new developments with a lower risk than 1% annual probability of flooding - as is the case for this site - insurance should be no less readily available than for any other development.

Conclusion

The proposed CCfE development site to the west of Wisbech is viable in terms of flood risk. The risk associated with the River Nene floodplain is mitigated as a result of off-site flood defence enhancements. Other potential on-site flood risks can be managed within the site through the use of a range of appropriate industry standard practices, such as attenuation ponds, swales and the existing IDB-maintained water course system.

The potential flood risks to the wider area generated by the proposed development will be managed through the design of a comprehensive surface water drainage system in accordance with industry best practice.

¹² C697 The SuDS Manual, CIRIA, 2007

¹³ <https://www.abi.org.uk/>