

**FLOOD RISK ASSESSMENT
FOR PROPOSED RESIDENTIAL DEVELOPMENT
AT CRAZY ACRES, CHASE ROAD,
BENWICK, CAMBS.**

FINAL REPORT

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GCB/ROBERT HOME

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1.0 INTRODUCTION

- 1.1 A full planning application is to be submitted by Dr Robert Home on behalf of Mr A Smith for proposed residential development at Crazy Acres, Chase Road, Benwick.
- 1.2 A Flood Risk Assessment is required to accompany the planning application for approval by the Environment Agency and to meet the general principles and conditions contained in the Planning Practice Guidance to the National Planning Policy Framework (NPPF).

The site, as situated is shown within a defended Flood Zone 3 of the Environment Agency Map for Planning. The latest Agency Maps have been created as a tool to raise awareness with the public and partner organisations such as Local Authorities, Emergency Services and Drainage Authorities. The Maps take into account existing flood defences.

The site is also located in the March West & White Fen Internal Drainage Board district.

- 1.3 Geoff Beel Consultancy was appointed on 25th May 2021 to prepare a Flood Risk Assessment.
- 1.4 A previous Flood Risk Assessment and Outline Drainage Strategy for development at the site was prepared by Stirling Maynard Consulting Engineers in January 2018 and received approval from the Environment Agency by way of letter dated 11th December 2018 file ref: AC/2018/127783. However, planning approval was refused on 14th January 2019 and subsequently dismissed on appeal of APP/DO515/W/19/3228109 on 20th February 2020.

2.0 LOCATION

- 2.1 The development site is located on the east side of Chase Road and 500m north of the River Nene (Old Course) at Benwick. The National Grid Reference of the central point of the site is TL 33309171.
- 2.2 The position and extent of the site are shown on Fig 1 – Location Plan at the end of the document.
- 2.3 The site, located within the March West & White Fen Internal Drainage Board district and immediately alongside an IDB Main Drain is shown within defended Flood Zone 3 as detailed on the Environment Agency Flood Map for Planning.

3.0 THE SITE AND SEQUENTIAL TEST

- 3.1 The site has planning permission for ‘change of use of land to travellers site involving formation of access track and siting of 2 no. touring caravans’ (ref; F/YR09/0699/F)
- 3.2 The area of development is approximately 0.97 hectare with vehicular access to Chase Road.
- 3.3 The proposed site layout consists the addition of 4 static caravans off shared access from Chase Road.
- 3.4 The Sequential Test and Exception Test will require to be applied but the development may be permitted as the site is protected against the 1 in 100 year return period flood event inclusive of climate change, thus meeting the requirements of NPPF. Planning approval is already in place for the site and hence the Sequential Test is met.

The Environment Agency Flood Map for Planning takes into account existing defences which are the nearby Middle Level defences to the River Nene (Old Course) and as no Level 2 Strategic Flood Risk Assessment has been carried out by Fenland District Council the risk of flooding is not properly identified. With the River Nene (Old Course) defences taken into account, the site is correctly identified by the Environment Agency as located within a defended Flood Zone and the Sequential Test is met.

4.0 EXISTING FLOOD ALLEVIATION MEASURES

- 4.1 The site is within a defended floodplain, as defined in Appendix 1 of the Environment Agency’s ‘Policy and Practice of Floodplains’ and is considered to be passive until such a time as a flood greater than that for which the defences were designed occurs. The likelihood of flooding due to overtopping or failure of a flood defence embankment is considered to be small. The Middle Level drainage area including the catchments of individual Internal Drainage Boards are protected by the Ouse Washes Barrier Bank offering protection against a 1 in 100 years return period fluvial flood event.
- 4.2 The site is located within the March West & White Fen Internal Drainage Board district with the nearest ‘main drain’ immediately alongside the site. Land levels at the site are generally at minus 0.50m OD with Chase Road carriageway level at plus 0.50m OD. Finished floor levels will be raised a minimum of 400mm above existing ground level. The watercourse, known as the River Nene (Old Course) located 500m south of the site is an embanked channel offering protection against flooding of the surrounding low lying land to a 1 in 100 years return period fluvial flood event immediately south of the site with defence levels between 1.60m and 1.65m aOD.
- 4.3 The existing standard of drainage for the March West & White Fen Internal Drainage Board is 1 in 50 years return period, compatible with the Department of the Environment, Food and Rural Affairs target level of service for rural

drainage and flood defence works. Freeboard of a minimum 1.20m is provided to the lowest land levels.

- 4.4 The site and surrounding land drains by gravity to the White Fen Pumping Station to discharge into the River Nene (Old Course) managed by the Middle Level Commissioners. The River Nene (Old Course) also provides protection against the 1 in 100 year return period fluvial flood event.
- 4.5 The Middle Level Commissioners have recently carried out a Strategic Study of the Middle Level drainage area to satisfy future requirements for the provision of an adequate level of service to meet the 1 in 100 year return period flood event as well as incorporating the future impacts of climate change.
- 4.6 Current maintenance standards within the March West & White Fen Internal Drainage Board district and the Middle Level drainage area are generally good. During the operation and maintenance of its pumping stations, associated structures and channel systems, particularly those that could affect property, the Board/Commissioners seeks to maintain a general standard capable of providing flood protection to its district. A routine maintenance programme is in place to ensure that the Boards/Commissioners assets are commensurate with the standard of protection that is sought. However, bank slips, blocked culverts etc, may occur from time to time and these matters are usually dealt with promptly.

5.0 POTENTIAL SOURCES OF FLOODING

- 5.1 Four potential sources of flooding have been identified as a result of this assessment:
 - a) local blockages to IDB main drain system
 - b) storm return period of 1 in 50 years being exceeded
 - c) failure of White Fen Pumping Station
 - d) overtopping of flood embankments to the Old River Nene
- 5.2 The probability of flooding from source a) is low due to the maintenance standards already achieved and managed by the March West & White Fen IDB.

The probability of flooding from b) is also low due to the March West & White Fen IDB main drain design standard incorporating a minimum 1.20m freeboard to the lowest land level which provides adequate storage in events greater than 1 in 50 years. Information provided by the Middle Level Commissioners identifies design water levels in the White Fen system as typically between minus 2.90m and minus 2.20m OD
- 5.3 Failure of White Fen Pumping Station may occur due to long term mechanical breakdown or power supply being disrupted. However, in these circumstances, if conditions were such to put properties and land at risk of flooding, the Board would take emergency action to maintain the drainage

level of service by utilising temporary pumping equipment. The probability of such an occurrence is also considered to be low.

5.4 The major flood event of Easter 1998 gave rise to the highest ever recorded flood water levels in the Middle Level system but no property flooding occurred as a result of any overtopping of embankments in the lengths of river referred to. Proposed floor levels of the development will be at a minimum of 400mm above existing ground levels.

5.5 The standard of protection provided by the combined means of soakaway drainage and IDB main drain provides a low risk of flooding due to high groundwater, overland flow and any surcharges of systems due to prolonged or intense rainfall. The standard of protection would be approaching a 1 in 100 years return period event.

6.0 OTHER SOURCES OF FLOOD RISK

6.1 Groundwater

The local drainage network is managed to control soil water and groundwater levels, in consultation with the Environment Agency groundwater flooding was not highlighted as a significant source of flood risk. The proposed development is not considered to exacerbate groundwater flood risk.

6.2 Sewers

The site has an existing sewerage system plant already in place and no risk of flooding is anticipated.

6.3 Reservoirs, Canals and other Artificial Sources

None are within the surrounding area of the development site and pose no risk of flooding.

7.0 EXTENT OF KNOWN FLOODING

7.1 During the preparation of this assessment, no evidence was discovered of the site being flooded or of any adjoining properties within the last 100 years.

8.0 PROBABILITIES AND TRENDS OF FLOODING

8.1 The probability of this development flooding from localised drainage systems is very low. It is also intended to construct floor levels of the development at a minimum of 400mm above existing ground levels and well above the White Fen system design water levels.

8.2 The probability of the site flooding with water from any main river system is less than 1% because of the standards of the existing flood defence systems, storage within existing drainage channels and the location of the site.

8.3 If under very extreme events, levels of floodwater from main river or arterial

systems rose to such an extent it is highly unlikely that the site would be flooded due to existing land levels.

- 8.4 The water levels in the drainage channels will tend to rise as a result of the impacts of climate change. However the existing systems and defences together with the raising of floor levels 400mm above existing ground levels and well above existing White Fen system design water levels will be appropriate for the design life of the development (i.e. 100 years). No adverse effect will be suffered at this site.

9.0 IMPACTS OF FLOODING

- 9.1 No significant impacts of flooding are anticipated.
- 9.2 Floor levels of the development will be raised 400mm above existing ground levels and suitably anchored to ground anchors.
- 9.3 The general location of the site within the catchment is such that if flooding occurred from the award drain or main drain and Middle Level river systems, then probably 2 to 3 days warning time would be available.
- 9.4 Displacement of water from the site will not affect any adjoining properties as the surface water run-off in future will be via an unregulated discharge to the adjoining IDB main drain subject to application and approval by the March West and White Fen IDB.
- 9.5 The developer should ensure that the eventual occupiers of the dwellings are sufficiently aware of the risk of flooding and the standard of the existing defences. The Environment Agency provides a Flood Warning Service which includes Flood Warnings Codes and uses direct warning method where the risks and impacts of flooding are high. Indirect warnings are provided to all flood risk areas, event those at low risk of flooding, The main method is media broadcast via local radio and also be television.

In addition to direct and indirect flood warnings, the Environment Agency operates a 24 hour a day Floodline Service providing advice and information on flooding, contact tel.no. 0345 988 1188 and the occupiers of the new dwellings should register with the Floodline Direct Warnings Service to receive any future flood warnings.

10.0 RESIDUAL RISK – EXTREME EVENTS

- 10.1 The residual risk from extreme events is very low on this site, because of its location within internal drainage system, existing surface water systems and proposed floor levels compared to existing White Fen system design water levels.
- 10.2 The site is within a defended Flood Zone 3 according to NPPF classification with a very low risk of flooding due to the current standards of drainage and flood defences. The site is not located within a Functional Flood Plain of any 'main river' or 'main drain'. The Environment Agency Flood Map for

Planning has been produced taking account of existing flood defences and standards of protection.

- 10.3 In the extreme event of a serious blockage or pumping station failure occurring to the arterial drainage system, protection will be afforded by the proposed raising of floor levels above existing ground levels.

11.0 CONCLUSIONS AND RECOMMENDATIONS

11.1 As a result of the assessment, the following conclusions have been reached:-

- The proposed development is not in a Functional Floodplain. It is in a Passive Floodplain of the River Nene (Old Course) and March West & White Fen IDB systems.
- The site is in a defended Flood Zone 3 with the actual risk of the site flooding from main river and main drain being very low (less than 1%).
- Although the site is located within an Internal Drainage District with a minimum standard of drainage of 1 in 50 years, this accords with Defra guidelines for rural development. Freeboard to design water level of 1.20m to lowest land level is available for events greater than 1 in 50 years providing further storage within the drainage channels.
- Floor levels of the new dwellings will be raised 400mm above existing ground level and well above the White Fen system design water levels and suitably anchored to ground anchors.
- Surface water drainage from the development will be achieved by an unregulated discharge to the adjoining main drain subject to application and approval of the March West and White Fen IDB.
- The Middle Level Commissioners have confirmed by way of pre-application information that according to the Board's records the site is the subject of two consents issued circa 2010 and therefore issued by the White Fen DDC. These are a byelaw application ref: MB/WF/109 Consent 7, for the formation of a hardstanding, the installation of an outfall pipe and outfall from a Sewage Treatment Plant; the replacement of a boundary fence and the installation of various utilities together with a discharge consent, ref: MB/WF/106 dated 24th February 2010 to discharge treated effluent into the Boards system.