

Flood Risk Assessment - Soberhill Farm, Wilfholme, YO25 9BQ

Topography

Wilfholme is an area of carr land situated to the west of the River Hull / Barmston Drain and to the south of Watton Beck. Black Dyke is to the south-west. It comprises open fields, some of which is arable and other parts are used only as pasture land. The fields are surrounded by open dykes and drainage is via land drains which discharge into the dykes, leading to the main water courses. There are no main drains in the area.

It is common knowledge that some of the land on Wilfholme Carrs is at risk of flooding following adverse weather conditions which give rise to an increase in water levels. Flood Risk maps show that the area around the proposed site (OS33) is considered to be in Zone 3, although having the benefit of flood defences (see Documents 4 & 5).

Elevation

The key to assessing flood risk at this location is to be able to accurately determine the elevation at various locations such as the edges of dykes. Some general information is available from the Environment Agency website, although it does not necessarily pinpoint the exact locations relevant to this risk assessment.

Having consulted the Environment Agency directly, they confirm that they do not hold any historical data relating to flood breaches at the proposed location, so are unable to supply any detailed information via computer modelling and cannot supply a Flood Defence Breach Hazard Map. However, there are a variety of tools available on the internet where aerial maps allow the pinpointing of exact locations and they give an estimate of height above sea level at those locations. Unfortunately, these tools do not usually explain their method of calculation so it is not possible to verify the accuracy of these estimates (see Document 6), but do serve to provide guidance on the relative heights above sea level at various points in the locality.

Having consulted the EYC Flood Risk Assessment and sought advice from both the Environment Agency and the Beverley & Holderness IDB, I am of the opinion that this planning application will have no impact whatsoever (either positive or negative) on flood risk in the surrounding area. On the contrary, there will only be an impact if actions by other agents (such as the Environment Agency or Drainage Board) cause a change in the water levels of drainage dykes surrounding the fields.

Previous Observations of Flooding

Having lived at Wilfholme for 40 years, I have observed flooded land on a number of occasions. In adverse conditions, water gathers in the fields from two sources. Where the land is low-lying, groundwater gathers in depressions and the water in other parts of the same field runs towards those points, contributing to large "puddles". However, the main source is as a result of water creeping upstream along the drainage dykes, overspilling into the fields where the dykes have a low elevation. Those parts of Wilfholme at higher elevations will not flood. During the last 40 years, I can confirm that the areas immediately surrounding Soberhill Farm, Rose Cottage, Manor Bungalow and Manor Farm have never flooded (even during the severe event of 2007).

The same applies to Wilfholme Road and Wilfholme Carrs (Aike Road), neither of which have flooded to any extent beyond “puddles”. The only water which has gathered in field OS33 has been from groundwater gathering in a depression near the SE corner of that field. Water has never gathered in the upper (NW) end of that field as the ground is higher. The water level in the dyke remains relatively low as the upward gradient from SE to NW ensures that it does not flow upstream sufficiently to offer any risk of overspill to the proposed site.

Future Risk

As the topography of the land does not change (and will not do so unless the responsible agencies take action to make that happen), it is a fair assumption that the behaviour of any future flooding will follow the same pattern as historical flooding. That is, it will breach the same locations where levels and/or dykes are shallow and it will gather in the same places in those fields. Where it has not flooded previously, it is not likely to flood in future (unless significantly more water covers the land).

Climate Change

Clearly, the impact of climate change could be that a greater amount of water contributes to flooding than is the case today. If and/or when this occurs, it is likely to be gradual over a number of years, rather than any sudden change. A larger volume of water is likely to aggravate areas currently subject to flooding before it starts to affect areas not previously flooded. Therefore, at Wilfholme the impact will most likely be a gradual increase from the east towards the west where the higher ground is positioned.

In order to quantify any potential climate change impact, it is probably best to consider the elevation differential between the areas currently subject to flooding and unaffected areas (such as the proposed site).

Tools available on the internet allow various map locations to be pinpointed and the height above sea level will be estimated. A map illustrating OS33 is included with the Application documents. Although there is no way of verifying the absolute heights calculated by such a tool, it does illustrate that the lowest point on the field is the NE corner. From there exists an upwards gradient towards the south and also towards the west and north-west, with the perimeter adjacent to Aike Road being the highest point. Considering the height of water standing in the dykes under previous flood conditions, the NE corner is almost full (albeit without any overspill) whilst the SW corner has at least 0.6m of spare capacity to the edge of the dyke. This suggests that, if flood water increased by 0.6m it would still be unlikely to negatively impact the proposed development (even if no mitigation measures were considered).

Mitigation

Bearing in mind the above in relation to height differential, it is considered that the best way of protecting against climate change would be to maximise the height differential between the possible water level and the base of the proposed dwelling. It is therefore intended that the detailed plans should incorporate an impermeable concrete base to raise the new building above the level of surrounding land.

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