

Flood Risk Assessment for Cola Training

Introduction

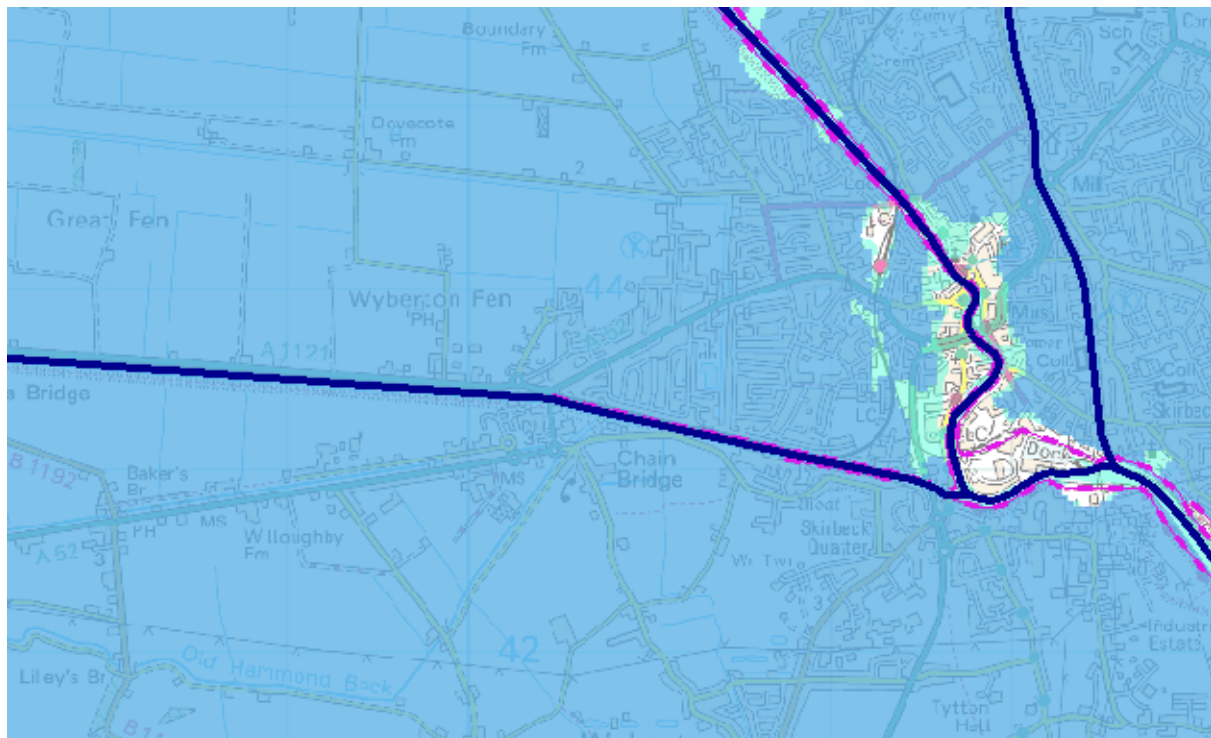
An application is due to be made to Boston Borough Council for Planning Permission to construct an extension to the existing building at Pheonix Poultry Farm, Swineshead Road, Frampton Fen, PE21 7JG which will be used for training purposes.

The site is within Flood Zone 3 as shown on the Environment Agency's Flood Zone Map. These maps do not take into account existing flood defences.

The Planning Application requires a Flood Risk Assessment to be carried out as required in Planning Policy Statement 25 (PPS25) Development and Flood Risk.

The site is shown within the defended area of the Boston Borough Council's Strategic Flood Risk Assessment (SHDC SFRA) map and is located in the Black Sluice Internal Drainage Board District.

Flood Risk



The above map is the Environment Agency flood risk map on the internet, which shows the risk of flooding from rivers and the sea, shows there is a high risk of flooding across the whole area. However this map ignores the presence of flood defences.

Application Site

The development is located on the southern side of the New Hammond Beck. The National Grid Reference of the site is 529840 343033.

The position and extent of the site is shown on the plan at the end of this document.

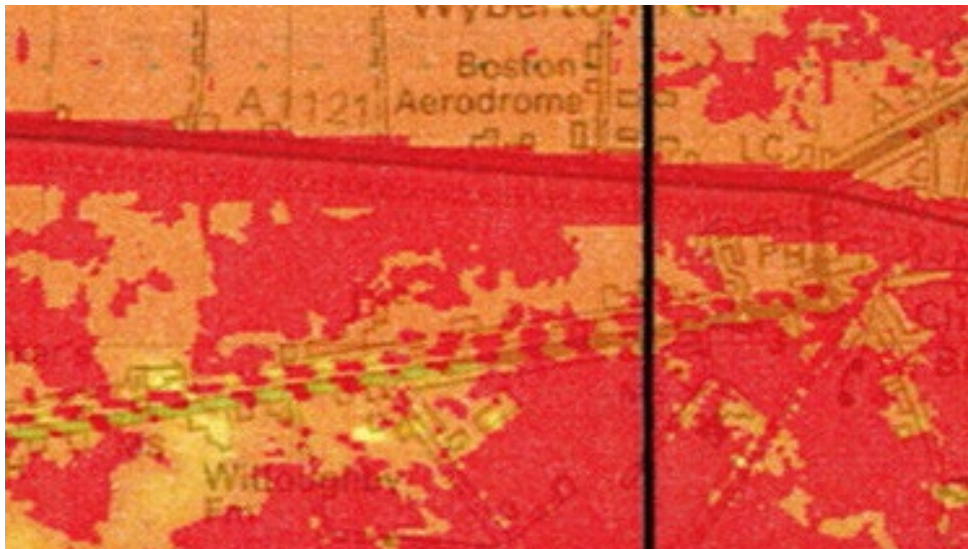
The proposed development is within Flood Zone 3(a) “High Probability” as detailed on the Environment Agency’s flood zone maps without defences, as defined in Table D1 of PPS 25.

Applying the flood risk vulnerability classification in Table D2 of PPS 25, the development is classified as “less vulnerable” in Table D2 of PPS 25, and the statement states that use is appropriate as a training centre.

The level of Swineshead Road south of the site is 3.00m OD and the existing site is 400mm below this at a level of 2.60m OD.

Strategic Flood Risk Assessment

The following information about the flood risk at the location of the proposed development has been gained from the maps produced for the Boston Borough Council Strategic Flood Risk Assessment:



This map indicates the following flood risk:

Areas in red: Hazard rating danger for all (flood hazard > 2)

Areas in orange: Hazard rating danger for most (flood hazard 1.25 – 2)

Existing Flood Alleviation Measures

The site is within a defended flood plain, as defined in Appendix 1 of the Environment Agency’s “Policy and Practice for the Protection of Flood Plains” and is considered to

be passive until such time that a flood greater than the defences can withstand occurs. The likelihood of flooding due to overtopping or failures of the tidal defences is considered to be very low. However the fluvial defences have only a standard of protection of 1 in 10years.

The site is alongside the New Hammond Beck which is maintained by Black Sluice Internal Drainage Board, and 200 metres south of the South Forty Foot Drain which is main river and maintained by the Environment Agency.

Potential Sources of Flooding

The following sources of flooding have been identified:

1. Risk of flooding from overtopping or breaching of tidal defences of Haven.
2. Risk of flooding from fluvial flows in the South Forty Foot Drain.
3. Risk of flooding from the South Forty Foot Drain if a breach occurs in the Haven
4. Risk of flooding from the New Hammond Beck Drain

1. Risk of Flooding from Overtopping or Breaching of the Haven

The banks of the River Haven at the present time provide a less than 1 in 100 year standard of defence. However assuming the new Barrier is built after 2016 there will be a standard of defence of in excess of 1 in 300 years. If the defences are overtopped then water will flow either into the South Forty Foot Drain or the Old Hammond Beck Drain, and when the level in these drains reach 3.00m OD and 2.50m OD then there is a risk of the site flooding. Flood water from this source is very unlikely to flood the site directly but will fill large watercourses such as the North Forty Foot Drain, the South Forty Foot Drain and the Old Hammond Beck. These may overtop and consequently flood the site. These flooding mechanisms are discussed further in the conclusions.

2. Risk of Flooding from fluvial flows in the South Forty Foot Drain

Approximately 12 hours after heavy rainfall (25mm to 50mm) the water level at the Southern end of the South Forty Foot Drain rises and approaches a level of 3.0m OD. Most of the southern banks are at a level of approximately 3.00m OD and therefore if an event of greater than 1 in 10 years occurs then water may start to overtop the banks and a breach will eventually occur. However levels along the whole length of the South Forty Foot Drain will not rise above 3.00m OD. Only if there is a catastrophic failure of both the sluices and the pumps at Black Sluice Pumping Station will the levels in the north east length of the South Forty Foot drain approach 3.00m OD.

3. Risk of flooding from South Forty Foot Drain if a breach of the Haven occurs.

If a breach occurs in the Haven then it is possible that water from the breach will fill the South Forty Foot Drain. If this continues then it is remotely possible that flood water will fill the South Forty Foot Drain. This could eventually increase the level above 3.00m OD causing flooding in the Boston area.

4. Risk of flooding from New Hammond Beck Drain

The level of the New Hammond Beck Drain is controlled by the sluices and pump at Chain Bridge Pumping Station, which is maintained by Black Sluice IDB. Modelling carried out by the Board predicts that the maximum level in the drain will be 0.8m OD in a 1 in 100 year event. In normal conditions water flows into the South Forty Foot Drain by gravity. However after heavy rainfall levels rise in both the South Forty Foot drain and the IDB system and the pumps operate. The Board maintain the pumping station in good condition. If there is a problem with the electricity supply to the pumping station then it is possible to operate one pump with a tractor through a dual drive gearbox. There are also connections to operate the pumping station with a generator. Also the system of drainage channels is connected via the Old Hammond Beck Drain to the Swineshead catchment and this would alleviate serious flooding. Therefore the risk of flooding from this source is very low.

Conclusions

The following conclusions can be made:

- The proposed development is not in a functional flood plain as defined by PPS 25.
- The greatest risk of flooding to the development is from a breach to the defences of the Haven. However the site is nearly 3 kilometres from the nearest section of the Haven. If the section north of Black Sluice Pumping Station overtopped or flooded then flood water would flood into the South Forty Foot Drain before reaching the development site. If the south bank of the Haven was overtopped or breached then flood water flowing in an westerly direction would flood into the Old Hammond Beck before reaching the site.
- Therefore any flooding to the site would occur from high water levels either in the South Forty Foot Drain or the New Hammond Beck Drain.
- There is a possibility, albeit very low, of the level in the South Forty Foot Drain increasing to above 3.00m OD. There is a continuous soil bund on the south bank of the South Forty Foot Drain which would prevent flood water from flowing out of the South Forty Foot Drain directly north of the site. Flood water would flow southwards near the railway crossing and further west towards Hubberts Bridge. This flood water would then fill the New Hammond Beck Drain.
- Therefore whether the flood water comes initially from the Haven or from the South Forty Foot Drain, the site would flood from water rising in level and flowing

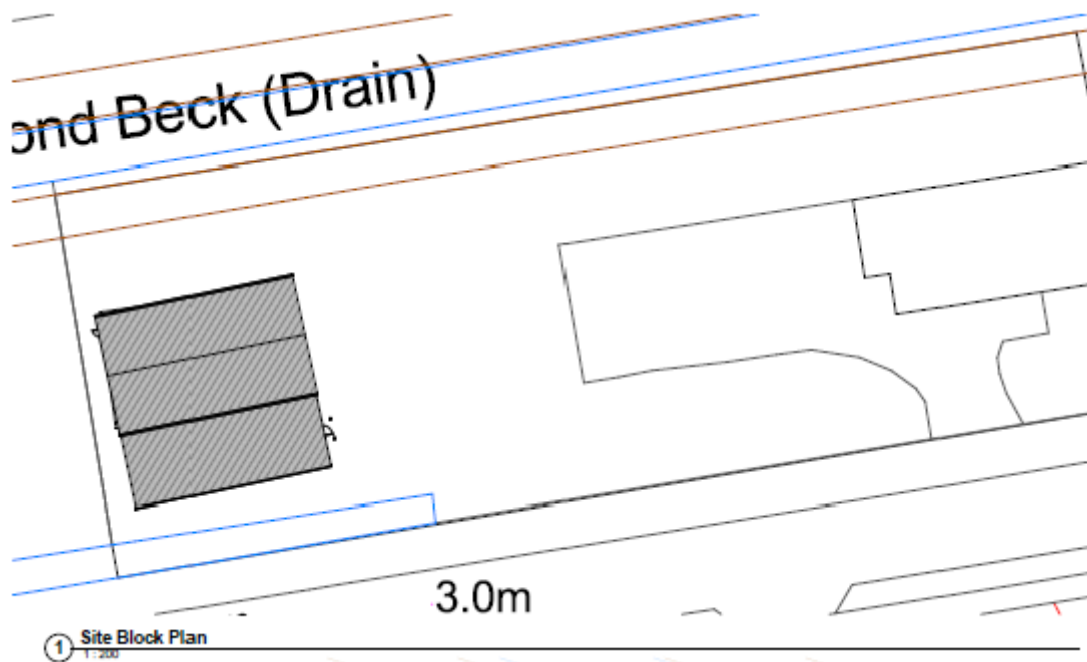
out of the New Hammond Beck onto the narrow section of land between the Drain and Swineshead Road, where the development is located. The water level on the site would slowly increase from 2.60m OD to 3.0m OD. As this happened there would be very little velocity of water across the site and therefore the hazard would not be as high as indicated on the hazard maps. Anyone still on the site would be able to safely evacuate the site onto Swineshead Road and travel away from the danger.

- In a flood risk area there is always a risk of an event occurring of greater magnitude than has been considered in this flood risk assessment.

Recommendations

- It is proposed that the floor level of the new extension to the building should be at 3.00m which is the same level as Swineshead Road.
- On site surface water drainage should be discharged into soakaways and these should be designed to BRE Digest 363 and approved under Building regulations.
- Occupiers of the existing property should register with the Environment Agency's Floodline Warnings Direct Service.
- If the occupiers of the building receive any flood warning from the Environment Agency they should immediately cease using the training facility and evacuate the site and not return until the Environment Agency has advised that there is no further danger of immediate flooding.
- The developer should consider designing the building with flood resistant/resilient techniques to allow it to be refurbished after being flooding to a depth of approximately 0.5 metres. Consideration should be given to the electrics and heating pipes being distributed at ceiling level rather than at floor level. Materials used for the floor and walls should be able to withstand flooding for a period of at least a week.

SITE PLAN



LOCATION PLAN

