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FLOOD RISK ASSESSMENT REF New Dwelling Adjacent 32 Red Lion Street, Boston. Linc's. PE21 6PZ

Background

See/read the below in conjunction with the attached EA Docs Letter Plans and Maps of predicted levels Risk etc.

For the 2006 scenario, the levels are based on the Northern Area Tidal Modelling carried out by Mott MacDonald in 2006.

For the 2115 scenario, the levels are based on predictions in *FCDPAG3 Economic Appraisal Supplementary Note to Operating Authorities - Climate Change Impacts* (October 2006) and Planning Policy Statement 25 (PPS25). The calculated total sea level rise between 2006 and 2115 is 1.14m.

It should be noted at the outset that this FRA is based on the EA docs and predictions but following recent enquiries/investigations on the "Basis Of" and "Exclusions and Omissions From" the EAs Flood Hazard Maps modelling, the extrapolated data presented as Hazard Maps cannot be in any way relied on as an accurate or even remotely possible consequence of any of the modelled breaches.

To expand on the above, the EAs modelling only accounts for inundation and outflow through a breach and not outflow or dispersal of floodwater via the drainage network either by gravity or pumping. In fact the model compounds inundation on inundation for a period of seventy-two hours then illustrates the worst moment during the seventy-two hour period.

The breaches are modelled with the base level of the breach set at more or less 3.0M ODN, which causes drainage to cease, more or less, after that point of the receding tide is reached, with the consequence that residual floodwater on land at that point is then modelled to subside to the breach height, partly I am informed by outflow through the breach, the remainder including all floodwater below the height of the base of the breach is then modelled to spread further inland. The reality is that floodwaters could and would continue to recede, at least through the gravity outfalls of the drainage network, continuing from the level of the bottom of the breach through to the level of the Low Tide (generally between –0.5M ODN to –2.0M ODN) and back

I have attached a graphic to show/illustrate the above in respect of the EAs Modelled Breach W12, which I do not think effects this site but it does show the perversity of the EAs modelling in the context of particular and in that all are based on the same parameters, all breach events.. In reality if the capacity and function of the drainage network were even partly accounted for, it would likely considerably mitigate the effect on this site in the short, medium and longer term of the modelled events.

Specifically in regard the Hazard Maps referred to above, wherein when included within the Forty Foot drain is shown to flood to in excess of 2.0m depth which is a physical impossibility. In reality it and other land drains have the potential, both hypothetical and real to disperse and discharge much/most of the floodwater modelled to remain/build up/result as shown by the EA Hazard Maps. The reality is that there is as far as I can find no bar to flood water at a depth of 1.0M adjacent the site flowing unimpeded to the Forty Foot Drain or Maude Foster Drain to disperse/discharge To

explain, the maps treat the surface of the water in the drain as solid ground and the water is consequently modelled to pool or flow along the surface of the water rather than the reality of it being absorbed into the water body that exists in the drain and that body of water and the flood-water combining to increase in depth only proportionate to the rate of dispersal/flow along the entire length of the drain with the consequence of the water height/depth of the entire drain increasing slowly as a result. There is of course the pumping station and gravity outfall at the foot of the forty-foot and Maude Foster that will also enable discharge of flood water back to the Witham Haven as and when tidal conditions allow, which will, as is illustrated by the attached graphic, exceed in duration the opportunity for inundation as a consequence of the breach.

It should be additionally noted that defence dimensions derived/provided/relied on in the EAs modelling have been shown not to be entirely accurate (read/see BBC vs Staples Appeal Decision) it appears the EA understates the dimensions of some defences and as a consequence overstates in certain circumstances the consequence of a breach.

Obviously the above as a minimum indicates that the EAs modelling is seriously flawed and as such cannot be accepted as an accurate, likely or realistic model or prediction of current defences or future risk. It provides in my opinion not even a best guess scenario, providing a cumulative worse than worst case based on a multiplicity of extrapolated hypothesis and omissions/compromises that in at least the above cases are incorrect and on the evidence of that the remainder of which may or may not be correct. The data is in the form of potential flood depth in various bands from 0.25M to in excess of 2.0M. Unfortunately that means where for instance the data indicate depths could be between 1.0M and 1.5M it could well be that worse than worst-case scenario could be only marginally above 1.0 M.

Clearly there is some risk, but that must be looked at in light of the exaggerated modelling by the Hazard Maps and in consideration of if or not a breach in the modelled locations, or any other location for that matter, are a likely/realistic prospect or not. What the risk is remains to be seen. What is currently certain is that based on the weather and storm/tidal surge hypothesis that the EA has modelled (presumably their “worst case scenario”), the consequence is far less than the EAs Hazard Maps indicate/show/ predict.

Risk in Context

Having assessed whatever hypothetical risk there may be, it is of course necessary to consider the likelihood or not of that risk materialising into reality. Also it is additionally necessary to assess how if the risk is real, what can be done to warn of an impending materialisation of that risk and what can be done to minimise any effect from it if it does occur.

Essentially since the demise of the "precautionary principle" risk is not the be all and end all. The NPPF practice Guidance says "The broad approach of assessing, avoiding, managing and mitigating flood risk should be followed." what this means is that development can take place where there is hypothetical or risk of flooding provided that, what the NPPF says at paragraphs 102 and 103 are followed,

1."within the site, the most vulnerable development is located in areas of lowest flood risk unless there are overriding reasons to prefer a different location; and"

2."development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed, including by emergency planning; and it gives priority to the use of sustainable drainage systems." and

3."a site-specific flood risk assessment must demonstrate that the development will be 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."

Flood risk of course is but one risk in the lives of future occupants and must be considered in that context.

Risk has to be accepted because even the most mundane daily activity incorporates risk but that risk must be seen in light of "probability" , "consequence" and "manageability", so that whatever the risk is, its probability of materialising can be objectively assessed and the consequences if it did can be put it in context with other risk so that it can be managed to minimise both it's likelihood of occurring and the potential consequence/s if it did.

Without accepting risk that we could do nothing at all because every action and operation carries risk, so it follows that if we adopt the "precautionary principle" and avoid all risk, nothing is possible.

Risk of death or injury from fire within buildings, is directly comparable to risk of death or injury from flooding or any other life threatening risk within the same.

Do we not build or inhabit buildings because there is a risk of death or injury from fire within them, no we do not, we manage the risk by providing separation, compartmentation and means of warning and escape. In fact, there is a great deal of legislation and guidance to ensure that the risk is managed and mitigated, the application of that works to reduce and minimise occurrences and consequences. In fact much of that legislation and guidance provides an appropriate model to adopt, without even necessarily the need for any new legislation, to enforce any reasonable requirement to prevent any person being put at risk of death from flooding.

In order to put flood risk into context I have pasted in below the DCLG statistical overview on Fire Risk/Consequences for 2011-12. As will be seen, these represent real everyday risk and consequences of that risk, including death. You will see there were 44,000 fires in dwellings, 37,600 of which were accidental. 285 people died in dwelling/house fires and that just over half of those deaths were partly or wholly from the products of combustion (smoke and fumes) rather than heat or burning.

In the context of the legislation and guidance and what is a real and ongoing "accepted risk" in relation to fire, I can see no reason why flood risk should be managed or dealt with in any other way than that applied to fire. Whilst it is of course eminently sensible, and the obligation and duty of all responsible persons, both personally and for there families and others whom may rely on them, to provide a means of warning, escape and safe haven from flooding. The reality is that flooding is in fact a considerably less real risk to occupants of buildings than fire.

I cannot find any statistic in relation to death or injury caused by flooding for any or a comparable period, but I know, acknowledging of course that even one death or injury is one to many, that fire risk far exceed flood risk, both in terms of numbers and that it is a relentless everyday risk, not just some hypothesis that may or may not occur once in a 100, 200 or a1000 years, or never.

Fire Statistics Overview
• In 2011-12 fire and rescue authorities attended 585,000 fires or false alarms in Britain, 7% fewer than in 2011-12 (para 1.1).
• A total of 272,000 fires were attended, 6% fewer than in 2010-11. Around 71% were outdoor fires (193,000), e.g. road vehicles, refuse, grassland. A total of 44,000 (16%) were fires in dwellings

(para 1.1, 1.2 & 5.1).
• The total number of accidental dwelling fires fell by 3% to 37,600 in 2011-12 (para 1.7).
Fatalities from fires
• In 2011-12, there were 380 fire-related fatalities in Britain, 24 fewer than in 2010-11 and lower than in any year in the last fifty years. The highest number of fatalities recorded was 967 in 1985-86. Through the 1990s and 2000s there was a general downward trend. (para 1.10).
• Three quarters (76%) of fire-related fatalities occurred in dwelling fires (para 1.11). Fire fatality rates are notably higher for people aged 80+ and for males, and in Scotland (para 1.14 & 1.25).
• Being overcome by gas, smoke or toxic fumes was partly or wholly the cause of death in over half (53%) of all fire fatalities.

All of the above is further reinforced by that in the wake of the Grenfell Tower Fire, none evacuated all residents of similar except to quickly remedy obvious faults (faults that should rightly not have existed) nor demolished any similar. The risk is being managed and mitigated, too slowly it has to be said in the face of such a catastrophic loss of life and the levels of current risk, but managed it is.

Sources of Potential Flooding

Potential flooding of the site could be tidal or fluvial according to the EA Data as a consequence of a failure of the defences of the River Witham which are as described and maintained as stated inthe EAs accompanying letter.

The EA data show the site immediately surrounding the proposed dwelling to be at risk of flooding from the Witham Haven by the "extreme event without defences" or 0.5% (1 in 200) Tidal Event inc Climate Change to between 0.5M and 1.0M depth.

Site Location and Description

The site is located approx 90M from the Witham defences, on Red Lion Street to the front and Colley Street to the rear.

Site level at the rear is at approx 4.25 ODN, Colley Street to the rear is at approx 4.12 ODN and Red Lion Street at the front at 3.92ODN. Floor Level within the dwellings will be a min at 300mm above Red Lion Street level so will be at more or less 4.25ODN.

Both Red Lion Street and Colley Street slope from South East to North West. Red lion Street between 4.65 and 3.49 ODN and Colley Street between 4.64 and 3.91 ODN from where floodwater will continue to flow following local street network to Norfolk Street and Cental Park which are respectively between 1.97 and 2.10 and 2.50 and 1.90 ODN.

Between the defences and the site, immediately adjacent the defences is almost entirely built up so in the event of a breach or overtopping, floodwater will be channelled between the buildings parallel to the defences, along streets parallel to the buildings and defences then along the many streets perpendicular to the defences, of which Colley Street and Red Lion Street are but two.

Floodwater on both Red Lion Street and Colley Street will again, as occurred in 2013 etc events, be more or less contained within the kerbs of the streets, not encroaching at all onto the site of 32 or other properties at the higher end of Red Lion Street.

In that any possible breach affecting this site will be limited by the buildings adjacent the defences and an exceptional tide is a single event, either the defences will be adequate to withhold the next tide or the defences can be repaired. Additionally in that breaches are modelled by the EA at 3.0M

ODN and land to the NE of the site is at lower than that,once the tide recedes below 3,0M, adjacent the site will be dry.

In any event The Boston Barrier is almost complete and the purpose of that is to negate the need for the defences that currently protect this site.

Summary

Although the site is notionally at risk of flooding and included within the previously flooded areas, the site has never flooded and as explained above will be ever more unlikely to flood in the future

Mitigation (If thought necesary)

No mitigation is necessary but to consider for were the impossible to occur or be exceeded, even then the occupants would not be in danger as there would refuge on he first floor well above predicted flood level and amost certainly dry or amost so egress to the ER routes. If any doubt at all exists it will be possible to raise the floor level of the proposed dwelling, although domestic occupation is already occurring and proposed to occur at the existing floor level, The new (and existing) dwelling could incorporate demountable defences to entrances into the building to whatever height considered appropriate to keep water out of the building. However it is noted no such applied or was requested nor conditioned in relation to planning approval B/18/0381, approved 24/10/2018..

Surface and foul water from the building will be dealt with by current services and the surface runoff from the land by as now.