Review of Flood Risk

Land at
Easter Compton, Nr Bristol

for
Harrow Estates Ltd

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1 Introduction

Arup have been commissioned by Harrow Estates to assess the flood risk to areas of land in their control to the northwest of Easter Compton village near Bristol. The boundaries of the land in question are indicated in red on the figure below.

In addition, the extent of land subject to an extant planning permission granted to ICI Ltd in 1957 and 1958 for the construction of offices, warehouses, stores, reservoirs, pumphouses, canteens, clubs, hostels, training establishments, amenity and welfare buildings, sports pavilion and sports and playing fields, is also shown (in blue).
2 The National Planning Policy Framework, Strategic Flood Risk Assessment and the Sequential Test

In March 2012, the guidance previously provided by PPS25 Development and Flood Risk was revoked and incorporated in the National Planning Policy Framework (NPPF) and the Technical Guidance thereto.

The NPPF identifies that a sequential approach should be applied by local authorities in determining areas of land appropriate for development in Local Plans, taking account of climate change over the longer term including factors such as flood risk, coastal change etc. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at higher risk and Local Plans should be supported by Strategic Flood Risk Assessment (SFRA) (NPPF para 100).

The purpose of the Sequential Test is to steer new development to areas with the lowest probability of flooding (para 101) and it is reiterated that Strategic Flood Risk Assessment should form the basis for applying the test.

The principles and parameters for evaluating the suitability of sites for development with respect to current and future flood risks remain as in the earlier guidance. Table 1 within the NPPF Technical Guidance sets out the definitions for Flood zones, appropriate uses, flood risk assessment requirements and policy aims; Table 2 sets out the Flood risk vulnerability classifications for development types and Table 3 identifies Flood risk vulnerability and flood zone ‘compatibility’.

Thus, as set out in Table 3 of the Technical Guidance, the NPPF identifies that all development types are permissible in Low Probability Flood Zone 1. This is land with a probability of flooding of less than 0.1% Annual Exceedance Probability (AEP) or 1 in 1000 year return period. In this Zone there is no requirement for a Sequential Test although all other possible sources of flood risk eg surface water, groundwater, artificial water bodies etc should be considered. A site specific flood risk assessment for a large site (over 1 hectare) in Flood Zone 1 would focus primarily on the management of surface water.

While Flood Zones may be initially assessed through the EA Flood Zone Maps, further detail is available through relevant SFRA, in this case the Avonmouth/Severnside Level 2 SFRA, prepared jointly for Bristol City Council, South Gloucestershire Council and the Lower Severn Drainage Board by Capita Symonds, and issued in March 2011. Plans extracted from the SFRA are included in this report.
3 Environment Agency Flood Zones

An extract of the Environment Agency (EA) website Flood Zone Map is provided below with the identification of the flood zones as defined thereon and the area of the Harrow Estates land delineated. The extent of land within Flood Zone 1 (Low Probability) is approximately 27 hectares.

As the EA’s assessment of the floodable area does not take account of existing flood defences and is interpolated from extreme tide levels, the extent shown represents the most conservative assessment of the area of land which would be considered suitable for development of all land use types as set out in Table 3 of the NPPF, without the requirement for a Sequential or Exception Test. A site specific flood risk assessment would focus on issues of surface water drainage and management.

This is similar to the Flood Zone plan given as Figure 7.1 of the SFRA. However as identified below this plan presents floodable extents identified for the future (2110) residual risk scenario given as Figure 7.5a in the SFRA Report (Fig 7.3 in the SFRA Technical Report).
SFRA considerations

As illustrated in the following plans extracted from the Avonmouth/Severnside L2 SFRA, when account is taken of flood defences, the local topography, tidal regime etc through hydraulic modelling of the area, much reduced areas of actual current and future flood risk are identified.

In the first case (the current actual Flood Zone 3 analysis), only small areas in the area to the east of the M49 motorway are identified as being at risk of flooding, generally to very shallow depth (less than 250mm). The same effect is observed over the almost the entire 1957 permission land. Protection of development and mitigation for flooding of the minimal depth and extents shown can be readily provided.

![Map of flood risk areas](image-url)

*Figure 7.2a – Present Day Actual Flood Risk (Flood Depth) (Figure 7.19 in Technical Report)*

(Maximum results from two scenarios 200 year tidal / 2 year fluvial and 100 year fluvial / 2 year tidal)
In the second scenario, the future (2110) Flood Zone 3 analysis, significant sections of the 1957 permission land remain free of flood risk in its eastern sector and an extended area of the Harrow Estates land.

It should be noted that this represents a ‘do nothing’ case i.e it assumes that there is no raising of flood defences to protect existing property in the Severnside/Avonmouth area against increasing flood risks arising from sea level rise and climate change effects. It should also be noted however that this area is regarded as a strategically important area and the Shoreline Management Plan (SMP) strategy is to ‘Hold the Line’ in the medium term, with some potential to ‘Retreat the Line’ of the defences in the longer term.
In the third scenario, the current Flood Zone 2 flooded area (and the boundary of Flood Zone 1), very limited areas are shown at risk of shallow flooding, generally less than 250mm.

On-site protection to property and mitigation works can readily be provided through a wide area.
Only in this scenario, the future (unmitigated) 2110 Flood Zone 2 case, do the Flood Zone 3/2 and 2/1 boundaries approach those identified on the EA Flood Zone maps.

It should be noted that this represents a ‘do nothing’ case i.e it assumes that there is no raising of flood defences to protect existing property in the Severnside/Avonmouth area against increasing flood risks arising from sea level rise and climate change effects. It should also be noted however that this area is regarded as a strategically important area and the Shoreline Management Plan (SMP) strategy is to ‘Hold the Line’ in the medium term, with some potential to ‘Retreat the Line’ of the defences in the longer term.
5 Conclusion

The Flood Zoning of an area of land in the control of Harrow Estates Ltd to the west of Easter Compton village near Bristol has been reviewed using information immediately available from the Environment Agency and the joint Strategic Flood Risk Assessment for Avonmouth Severnside.

Consideration of the SFRA identifies that considerable areas surrounding the site are at minimal current and future flood risk for the 0.5% AEP (1 in 200 year) event and for the current 0.1% AEP (1 in 100 year) event. Of the scenarios modelled and for which outputs are presented in the SFRA report, only in the future (2110) unmitigated 0.1% AEP (1 in 100 year) event are significant depths of flooding (and consequent hazard) identified in the area to the west of the identified site, in the 1957 permission land.

The review has identified that an area of at least 27 hectares is categorised within Low Probability Flood Zone 1 on the basis of the published Flood Zone mapping. This indicates protection to at least 0.1% AEP (1 in 1000 year) from tidal and fluvial flooding sources. Being located in this Flood Zone, the site is considered appropriate for development for any land use type without further consideration under a Sequential Test.

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