

## EXAMINER – HEARING 30<sup>th</sup> APRIL 2018

### SUPPLEMENTARY NOTE ON FLOODING AND DRAINAGE IN RESPECT OF POLICY H2

#### INTRODUCTION

Community Questionnaire Q31. Minimising impact on flooding (score 3.2) is the joint **second most important** criterion identified for site selection after “inside village envelope” (score 2.9).

All sites score **RED** against this criterion in SAR Table 6.3, except one 6 Acres scored **BLUE**. Table 6.1 suggests mitigation required on all sites except 6A where no mitigation is mentioned.

This note summarises whether this very important aspect of the selection process has been robust and evidence based. Previous submissions are fragmented and site specific.

Redwood Barn Flood Zones (FZ) 2 and 3 and most deservedly **RED** so not discussed further.

My professional credentials to speak authoritatively on this subject are in my submission response.

#### SITES AT NORTH END OF VILLAGE (UF and CP)

Sites lie on sloping ground of heavy clay soil either side of a small watercourse that drains from the east of the A329, via culvert under road and gardens then open again to River Thames.

Please note this part of the village drains to the River Thames, (not Thames via the centre of the village) and SAR pp16 is misleading in this respect.

Flood Zone (FZ) 1, lowest category risk of groundwater flooding. The only evidence for **RED** in the Site Assessments (SAs) is “*evidence of flooding due to problems with surface run-off from the northern end of the village*”. No photographic evidence of flooding in NP, unlike other parts of Parish.

My understanding is that in 33 years, there was only one flood event on the A329 associated with blockage of the culvert. Other flooding on the road here has been from blocked road gullies (poor maintenance) that should drain into the watercourse. Another event further down the watercourse near Upper Farm Cottage, was caused by lack of maintenance by the riparian landowner, since rectified.

There is nothing unusual about the drainage of this area and **NO** inherent additional level of flood risk beyond that normally associated with rare extreme events.

Run-off from these sites can be drained using attenuation drainage systems; the runoff is held back in ponds, swales or underground and released into the watercourse at greenfield run-off rate. A perfectly normal aspect of Sustainable Drainage Systems (SuDS), used everywhere, no special mitigation is needed.

Formalising some of the drainage from the UF/CP site areas will reduce even further the very low risk of uncontrolled run-off during extreme events. Development of these sites will actually improve the status quo. All explained to the qualifying body (QB) on several occasions.

#### SITES IN CENTRAL AREA (6A and PF)

These flat sites have identical hydrological setting alongside Warborough Ditch; main watercourse draining the area to the River Thames. Both sites are on identical geology - Valley Gravel capped with clay soil. FZ1 with small areas of PF mapped by coarse scale EA modelling as FZ2. Highest category of groundwater flood risk. EA surface water flood mapping (not river) shows high and medium risk

areas over Thame Road and Warborough Road right next to the sites; low risk areas around both sites and on small parts of PF. Flat sites are difficult to drain.

Thame Road just upstream from 6A regularly floods as does Warborough Road just downstream of PF (Character Assessment Fig 16 and SAR Scoping pp25).

Detailed hydraulic modelling of the Warborough Ditch by very reputable consultancy shows that none of PF falls in FZ2. They commissioned infiltration tests and measured the depth to the groundwater table and concluded the drainage strategy cannot rely on infiltration drainage. They proposed SUDS attenuation drainage retaining storm water on site and releasing it at the original green field runoff rate. I don't support large scale development (110 homes) on PF, but in my professional opinion the flooding, drainage studies and drainage strategy undertaken are detailed and robust. The information was available to QB.

In complete contrast, though hydrology and geology is identical, the drainage strategy for 6A is based entirely on infiltration – storing the water underground and allowing it to soakaway. The large flat shallow infiltration structures at the site are 0.5m below ground level and in clay. Infiltration testing was carried out in pits significantly deeper than the base of the infiltration structures, with depths 0.8 - 1.5m so bases and sides of these pits penetrated gravel. Testing was undertaken at incorrect depth. The infiltration properties of the ground down to about 0.5m depth at this site are relevant, not deeper. Other aspects of testing did not follow Codes of Practice.

Policies for the protection of groundwater require clear 1m thickness of unsaturated ground between base of any infiltration structure and the top of the groundwater table, all year round, every year. No data yet seen shows the depth to groundwater and its seasonal variation has been determined.

In my opinion a viable drainage strategy for 6A still has to be proven. Pointed this out to QB on several occasions.

LLFA no objection on drainage and flooding grounds but imposed stringent planning conditions requiring a detailed drainage design to be submitted and approved. Matter is a long way from closed as far as the regulators are concerned.

## **CLOSURE**

Scoring 6A blue and UF, CP and PF red for flooding and drainage is inconsistent and not supported by plausible evidence and rational technical analysis. This aspect of the SAs is an excellent example of where the site selection process is not robust and evidence based. It is particularly frustrating that my professional opinions were ignored by the Site Assessors, whereas recently the PC asked me to assist with an unconnected drainage problem elsewhere.

It is my opinion other aspects of the site selection process are similarly flawed particularly traffic, heritage, landscape and visual character. These aspects are dealt with in my previous submissions and accompanying submissions by others. Repeated requests that QB seek independent professional advice on the technical site selection criteria appear to have been ignored.

Richard H Thomas

22<sup>nd</sup> APRIL 2018