

Welwyn Hatfield Local Plan Examination

Arcadis letter report of 4th April 2019 (document EX154) on Chalk Dissolution Hazard Review Technical Paper by Wardell Armstrong LLP dated October 2018) (EX92B)

Comments by Professor John Burland on behalf of Save Symondshyde

1. Overall I found the comments in the Wardell Armstrong report worryingly complacent. If a subsidence event took place on the planned estate there can be no doubt that it would be blighted with very serious economic consequences to residents, to say nothing of the risk to life. It is worth quoting the late Professor Sir Alec Skempton, world renowned civil engineer, who in 1961 stated: “No amount of optimism expressed by the engineer on behalf of the client will have any effect on the great forces of nature.”
2. In Wardell Armstrong paragraph 1.6 it is stated that “site borehole investigations show no evidence of dissolution features, with chalk bedrock found in most boreholes at a consistent depth”. It is not clear what boreholes are being referred to. This statement flatly contradicts the statement in the Arcadis letter which, at the top of page 5 referring to British Geological Survey (BGS) boreholes near the site, states: “The elevation of the top of the chalk recorded in the boreholes indicates that the depth to the chalk surface can vary by up to 14.60m suggesting a karstic surface”. A karstic surface is by definition evidence of dissolution.
3. There seems to be very little evidence from borehole investigations on or close to the site that can be used to assess the presence or otherwise of solution features. The BGS boreholes referred to in the Arcadis report appear to have been used mainly to identify the geological stratification and carry no description of the structure of the chalk. When it comes to evidence from the nearby quarrying, the Arcadis report near the bottom of page 7 quotes Cemex as stating that “The limited working depth means that the chalk is not encountered in recent working areas. There are no records of the condition of the chalk in historic workings”. It seems to be a fact that the only direct evidence we have from the actual site as to the condition of the chalk is that obtained from the walkover survey carried out by Imperial College in March 2017 (document EX71A), and this points to a risk of subsidence due the presence of latent sinkholes.
4. Paragraph 4.8 of The Wardell Armstrong report states “Whilst the potential risks of encountering dissolution related hazards at the site are noted and should be afforded due consideration through comprehensive investigation and may require the use of engineered solutions to ensure the stability of the development, it is unlikely that these routine engineering challenges would bear a significant risk to the viability or deliverability of the proposed Symondshyde Village development.” I find this conclusion breath taking in its complacency.

5. The Arcadis letter is much more measured in its conclusions:
 - i) The numerical subsidence risk predictive model for natural dissolution features, after Edmunds (1987), indicates that the site appears to fall into the moderately high subsidence risk category and the walkover surveys have identified several possible dissolution features across the site.
 - ii) In order to determine the cause of the features identified within the site and the risks of natural dissolution features and chalk mining hazards being present within the site it would be necessary to undertake a targeted intrusive ground investigation.
 - iii) It is likely that a combination of geophysical survey techniques will be required at the site followed by targeted intrusive ground investigations to ground truth the geophysical results and to determine the cause of any anomalies identified.

6. The above recommendations are broadly in line with those I have previously suggested (EX71C Formation of Sink Holes at Symondshyde – Supplementary Report). It is absolutely vital that these surveys be carried out at the earliest opportunity to determine the level of risk involved in building on the site. That has not been done, so far as I can see from the evidence available. In the absence of site investigations that would produce evidence that could be relied on, it would be irresponsible, in my view, for this site to be regarded as suitable for the kind of extensive development proposed.

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