

FORMATION OF SINK HOLES IN THE SYMONDSHYDE FARM AREA

REPORTS BY THE DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING, IMPERIAL COLLEGE, LONDON

1. The Save Symondshyde Group raised the issue of the possible existence and formation of sink holes in the area of the proposed Symondshyde village (strategic development site SDS6) in our response to Policy SP24 in the Draft Local Plan Proposed Submission Document (Regulation 19) consultation in October 2016. In that document, we said:

“A member of the public has reported to us that there are eight sink holes in the area 300 metres north west of the proposed Symondshyde development site. We are seeking expert advice from Imperial College, London on whether there are likely to be sink holes in the area of the development site.

Preliminary advice is that both the geology of the area and the terrain are consistent with the potential formation of sink holes. A quantitative assessment of the risk of sink hole formations as a result of the changes in groundwater regime that result from a development of the type envisaged is required.

We consider that the proposed allocation of the Symondshyde site for development should be put on hold until an authoritative investigation into this matter can be carried out. We would be pleased to pass on to the Council and the Inspector the results of the preliminary investigations that Imperial College are now doing as soon as we receive them.”

2. Geologists from Imperial College carried out a preliminary walkover survey of the Symondshyde site on 2 March 2017. A copy of their report is attached at Appendix A. This showed that there was strong evidence of sink hole formation on the site. In particular, evidence of a textbook example of a chalk sink hole (Figure 2 in the above report) was found immediately to the west of Symondshyde Farm. This showed itself as a circular hollow in the ground of approximately 12 metres wide with a sharp dip of approximately 4 metres from the level of the farm buildings to the bridleway below. The ground in the hollow was dry, while the surrounding ground above the sink hole was wet, indicating that water was draining into the hole at that time.

3. We sent copies of the Imperial College report to the Executive Director (Public Protection, Planning & Governance) at Welwyn Hatfield Borough Council and to the Development Director of Gascoyne Cecil Estates on 10 March 2017, under cover of the letter at Appendix B. The report was subsequently amended slightly, and the revised version (the report dated 13 March, at Appendix A) was sent by email to the Council.

4. We received an immediate acknowledgement from the Council that the correspondence had been passed to Planning Policy for consideration. That was the last we heard from the

Council on the subject. The Council's Cabinet Housing & Planning Panel met on 16 March 2017 and considered the results of the consultation on the Draft Local Plan Proposed Submission Document. The issue of potential sink holes was not drawn to the CHPP's attention. On the contrary, the officer's report on the Submission Local Plan merely stated, in paragraph 4.37, that no new evidence had been submitted that altered the Council's assessment of the Symondshyde site.

5. In response to the email sent to Gascoyne Cecil Estates on 10 March, Anthony Downs emailed the following to John Gardner:

"I am unclear what it is you are seeking from me.

I can only add that we have taken our own geotechnical advice and that this includes an extensive bore hole survey across the whole of the Farm. We are thus fully conversant with underlying ground conditions and are confident that we are not presented with anything which undermines (no pun intended) our wider vision.

This is only one part of the significant technical investigation and general background work we have undertaken.

I am also in possession of a further technical paper on sink holes within Hertfordshire and as you are no doubt aware they are not especially rare - indeed the ground conditions to which you allude are prevalent in various parts of the County."

John Gardner subsequently (at the CHPP meeting on 16 March) asked Anthony Downs whether Save Symondshyde could have sight of the geological advice and borehole survey referred to above, but this request was politely declined.

6. Professor John Burland, CBE, FRS, FEng, NAE, Emeritus Professor of Soil Mechanics at Imperial College, London has now produced a Supplementary Report on the Formation of Sink Holes in the Symondshyde Farm Area. This is attached as Appendix C.

7. Based on a recent walkover survey of a wider area than the proposed Symondshyde development site (because the existence of sink holes or the potential for the formation of sink holes over a wider area can impact on a specific site), ten additional features have been identified as possible sink holes, of which four are very likely considered to be sink holes. The underlying geological nature of the Symondshyde area is such that it is particularly susceptible to the formation of sink holes. Unfortunately, the presence of latent cavities beneath the ground surface can only be detected by extensive drilling throughout the site, on a scale sufficient to establish a quantitative risk assessment of potential sink hole formation. The collapse of cavities existing anywhere in the underlying chalk could be triggered by changes in stress or ground water conditions brought about by development of the kind proposed at Symondshyde.

8. In Professor Burland's view, no development on a greenfield site of similar geology to that at Symondshyde should take place without a detailed professional study of the terrain to identify conclusively whether or not there is potential for sink hole formation. This would require extensive expert ground investigation by means of drilling to quantify the risk.

Conclusion

9. We respectfully ask the Inspector to hear evidence on this matter from all interested parties at the Local Plan Examination. As demonstrated above, we do not believe that sufficient consideration has been given to this matter in assessing the suitability of the Symondshyde site for residential and ancillary development of the kind envisaged, and we have been denied the opportunity to assess whatever evidence the promoters of the site may have on this matter.

10. Unless this matter can be resolved satisfactorily, the soundness of the Symondshyde village proposal must be questioned on grounds of achievability and therefore deliverability.

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