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To Success

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20th December 2018

Dear Ms Constantinescu,

Planning application Re: 2018/2442/P
basement excavation at 1 Spencer Rise, London NW5 1AP

Background

1. I write on behalf of the Adjoining owner Ursula Owen at 1C Spencer Rise, and immediate neighbours Sarah and Nicholas Tyacke of 1A Spencer Rise, Gillian Ingall and Henry Blaxland of 1B Spencer Rise, and of neighbours Dr Francesco and Juliet Manzini at 4 Spencer Rise and Rolf Sulhan at 5 Spencer Rise.

2. They have requested that I review how well the application considers the geology of the site and its groundwater and whether the method of working to support the excavation during excavation is suited to the ground conditions that can be expected.

3. In my opinion the application reflects a misunderstanding of the geology and its groundwater and as a consequence is vulnerable to engaging a method for excavation that would not adequately either restrain the ground or control groundwater encountered and could result in local ground instability that could jeopardise surrounding properties as well as the public highway.

4. I am mindful that Campbell Reith has reviewed the proposal and has requested further work *(Note from Graham Kite 19th Oct 2018, and Campbell Reith assessment of Dec 2018)* and that further evidence has been submitted by Mr Vincent *(dated 14th November 2018)* but these essentially refer to the stability and settlement of the permanent works. The matters raised by my review concern the temporary works; these are alluded to in Campbell Reith's latest report and the issues outlined here should be considered by them before their final opinion is sought.

5. I am a Chartered Geologist and a Chartered member of the Institution of Water and Environmental Managers (CIWEM), with over 40years experience in ground engineering, and registered as an Adviser in the UK Register for Ground Engineering Professionals. Working with the Heath and Hampstead Society I was instrumental in developing the ARUP report commissioned by Camden to guide those wishing to excavate basements *(Ove Arup & Partners (2010) Camden geological, hydrogeological and hydrological study. Guidance for*

Subterranean Development. For London Borough of Camden November 2010) and have over 20 years of experience working with basements in Camden and neighbouring Boroughs.

The unaddressed issues

6. It is evident from the site investigation report from *Ground and Water Ltd* that the near-surface geology of the site has been misunderstood and, from that, the character of the ground to be excavated and the way it can respond to excavation especially when containing flowing ground water.

7. The ground investigation reports the London Clay Formation encountered by two window samplers on site to be *Brown/dark orange brown to a brown and bluish grey mottled sandy silty CLAY. Sand is fine to coarse grained.* The Formation has been proven to vary in thickness from greater than *3.60m* to greater than *4.10m.* These facts are correct, however, what the report fails to recognise is that this London Clay is not in-situ sediment as found, for example, in central London, but sediment transported by mudflows during the Ice Ages; a point referred to by Campbell Reith when they refer to "*head*". It is not clear that the applicant appreciates this, and the differences are significant to both the design and analyses of the works.

8. The high and sloping ground around Hampstead deposits has enabled superficial deposits formed from London Clay to accumulate which are very unlike the London Clay to which the technical document from Vincent & Rymill refers to in Section 5, where it says *However, based upon our previous experience of many other basements formed in the same way, in the same situation onto the London Clay differential movement post basement construction is nil or negligible.* The experience referred to here may not be relevant.

9. The most significant differences between the ground here and that in un-transported in-situ clay referred to in the application Section 5 is in the nature of (i) its strength and stiffness especially in relation to (ii) the presence of groundwater.

10 With regard to (i) strength and stiffness; the following is reported on the basis of the ground investigation at the site. *GEOTECHNICAL TESTING RESULTS Although no in-situ testing was undertaken, onsite engineer appraisals of the soils recovered from the London Clay Formation indicated the soils to be stiff. Consistency Index calculations indicated the London Clay Formation to be stiff. Geotechnical analysis revealed the soils to be heavily overconsolidated.* That gives a picture of stiff London Clay of the type encountered in central London where its stiffness is essentially derived from a previous overburden load. However, the over-consolidation present here is essentially due to desiccation during the cold dry periods of the Pleistocene and not to the removal of overburden load. The fabric of these deposits can be expected to be very different from the clay found in central London and its stress-strain relationships should be measured rather than inferred, as is the case with this application.

11. With regard to (ii) the presence of ground water; the ground investigation records *Groundwater was not encountered during the intrusive investigation. However, the return monitoring visits on 12th February 2018 and 21st February 2018 revealed groundwater at 4.00m bgl and 2.30m bgl respectively in WS1.* Ground water is to be expected and is therefore important as it will change the moisture content of the ground which in turn affects the stiffness of the ground, yet the situation with ground water at this site is unresolved. The water level fluctuation should be known and its relationship to rainfall as these will affect the success of the temporary works.

12. Temporary works include the manner of excavation used, the ways in which the ground so exposed is to be supported and ground water encountered is to be controlled. They are addressed in the application but assume stability and dryness unless otherwise encountered; two extracts are shown below

e) Whilst forming the wall and in the event that the vertical soil face is unstable, lateral propping will be provided as required to the excavation and to the sides of the working trench. The front and side faces of the excavation will be propped using a sacrificial inert board and acrow props as appropriate.

11. Excavations are to be kept dry and dewatering may be required to remove any perched water that enters excavation. Any requirement for dewatering of excavations is likely to be by pumping from small sumps formed at the base of the excavation. Dewatering process to be agreed with supervising engineer prior to this work commencing.

13. Given that the fabric of the ground appears to be not properly appreciated, including the possibility of there being shear zones within these old mudflow deposits or other surfaces of preferential weakness, and that the ground water has already been encountered at depths that will be passed by the excavation, it would be reassuring to have the methods for excavation and ground water control specified on the basis that the ground will not be stable, i.e. will not sustain a vertical face unsupported for sufficient time, and will be wet before planning approval is considered.

14. For these issues to be resolved further ground investigation is required and better water level records acquired.

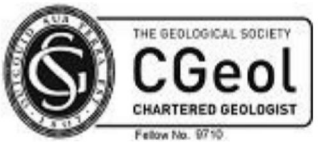
15. A further point that has not been considered is the raising of water levels that may occur in ground upstream of the basement. Such elevation will affect the moisture content of the ground and hence its strength too and this effect can extend beyond the limits defined by the Party Wall Act.

16. Finally, it must be appreciated that ground can respond to changes in the pressure of its water and its water content and that these adjustments made when ground water is interfered with can take years to fully express themselves and continue well beyond the termination of the Party Wall Agreement. A case history from Finchley Rd shows adjustments occurring up to 10 years after the completion

of excavation. Assurances should be given so that costs associated with damage arising from such adjustments can be resolved.

Yours sincerely

[redacted]



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