



18 May 2015

Chris Tomlin
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Dear Chris

6 Sumatra Road, NW10: Review and assessment of Geotechnical aspects of BIA.

I have reviewed the geotechnical aspects of the BIA and in particular those elements which relate to the assessment of Land Stability as per CPG4. The work has been carried out under the attached terms of business.

The documents reviewed are as follows:

- 6 Sumatra Rd., Basement Impact Assessment: Groundwater, H Fraser Consulting February 2015
- 6 Sumatra Rd., Basement Structural Method Statement
- 6 Sumatra Rd., Appendices Part 2, includes Ground & Water report
- 6 Sumatra Rd., Independent Review by LBH Wembley

Summary of Topography, Hydrogeology and Geology

The site is located on a gentle south facing slope which is steeper to the north towards the cemetery and gentler to the south. Gradients have been estimated from the OS map locally as around 1 in 10 (around 6°). Gradients at the property are understood to be around 1 in 30. The property is located at approximately 58mAOD (Note that Ground & Water assess the elevation at 55.4mAOD).

There are no rivers or surface water features within 500 m and 250 m of the site respectively. There are no surface water abstractions within 2 km of the site. The old course of the headwaters of the River Kilburn lies approximately 240 m to the east of the site.

The site lies on London Clay which typically comprises a stiff grey fissured clay, weathering to brown near surface. Concretions of argillaceous limestone in nodular form (Claystones) occur throughout the formation. The geological map (North London 256) indicates a potential for Head Deposits to be present close by (~50m) to the north of the site. Typically they are thin (<2m) and consist of soft, ochreous brown silty clay with blue-grey mottling in places and angular, frost-shattered fragments of flint occur sporadically throughout.

The London Clay is classified by the Environment Agency as unproductive strata (rock layers with low permeability and negligible significance for water supply or river base flow). The site is not within a source protection zone of a public water supply.



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The Ground Investigation work at site and subsequent laboratory testing confirmed the presence of London Clay with a thin layer of made ground probably associated with the house construction. Trial holes excavated to reveal the foundation indicated that the house is formed of brickwork founded on a thin layer of crushed concrete onto London Clay at around 1.2m or the foundations are deeper concrete footings, depths not proven, presumably founded onto London Clay.

The Borehole was drilled to 7m with a corresponding and adjacent Dynamic Probe (DP) hole to 10m bgl. The window sample technique does not give good quality samples so a visual/hand vane estimate of shear strength was not carried out. The dynamic probe results have been assessed and converted to SPT N vales and further translated to qualitative assessments of undrained shear strength. This indicates quite low strength for London Clay with a marked improvement indicated by higher blow counts at around 8m. Moisture content values are slightly wet of plastic limit indicating a firm to stiff consistency. The low strength suggested from the DP may be due to disturbance during drilling and its proximity to BH1 (if drilled after). A swell test has been undertaken in the laboratory. G&W suggest a swell pressure of 35kN/m². It is understood that this is likely to be less than imposed bearing pressures. The report appears to confuse bearing capacity and pressure in its description of heave potential, with a related typographical error on p18 (5545kN/m² at 3.50m, should probably read 55kN/m² at 3.50m).

Proposed Development

The property is a three storey brick built mid-terrace with dormer windows in the roof. The property extends to the rear with two storey and then one storey accommodation. There is an existing unfinished basement beneath the three storey part of the house which extends for the most part to a depth of 0.9 m below the ground floor, with a small area extending to 1.8 m below the ground floor. The area of the house and garden is estimated as 0.02 ha (200 m²); the area of the footprint of the house is estimated as approximately 80 m². The proposed development is to extend the existing unfinished

basement to a depth of 2.5 m below the footprint of the three storey part of the house, with a lightwell to the front and a lightwell and stairs up to the rear garden. The area of the front lightwell is c. 2 m², and the area occupied by the rear lightwell and stairs is approximately 5.5 m².

CPG4 Screening Exercise

The Structural Method Statement report has gone through the screening exercise for the proposed development (see pages 12 to 21). This has been reviewed and is considered satisfactory.

The areas taken forward for further consideration were:

5. London Clay: An appropriate level of investigation has been carried out
6. Trees: Further considered and no trees to be removed and the design has appropriately considered their presence.



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9. Worked Ground: The investigation revealed a minor presence of made ground associated with the house construction.
12. Highway/Pavement: The design has accounted for Highway Loading
13. Depth of Basement: The depth is not a significant increase and underpinning is proposed for the party walls.

Conclusions

The assessment of ground conditions and CPG4 considerations has been carried out in a satisfactory manner. The site is not considered to be at risk of slope instability and ground movements are likely to be minimal with appropriate structural design and good construction practice.

This review has been completed by Jon Smithson, a chartered geologist with over 30 years' experience.

Yours Faithfully

Jon Smithson

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