

Mrs Carole Markey
35 South Hill Park
Camden
London
NW3 2ST

Dear Mrs Markey

Please see below comments in response to earlier comments by First Steps & Michael Eldred relating to a Basement Impact assessment report 13.032.3 prepared by Ecologia. The signatories to the report have responded thus:

Comments on the First Steps (de Freitas) report by Mike Summersgill

After commenting that the initial BIA was defective because it had no specific ground investigation on the site, and had solely relied on information from other investigations in SHP, Dr. de Freitas' report now considers that the current 'on-site' information should be generally discounted and that his interpretation/experience of soils in the area of Hampstead would apply to this Site. It should be noted at this point that Mr. Gabriel had personally logged the soils on another nearby investigation at No. 66 SHP which is at a similar stratigraphic level in the London Clay, unlike at 85SHP further uphill (where sandy slopewash or 'Head' deposits were found overlying the London Clay), and is a Chartered Geologist.

Dr de Freitas introduces the concepts of potential geological stratification of the soils in the area, with comments like "*a 2 to 3 metre zone of disturbed ground*" (2.10) and "*the zone of disturbed strength*" (3.2), although the Claygate Beds are some considerable distance away on the national geological mapping by BGS. But the site investigation has clearly shown, as at Nos. 66 & 71 SHP, that the ground beneath Nos. 33/35 SHP is London Clay with a weathered (but not disturbed or weakened) upper zone; it is accepted widely that the strength of London Clay increases with depth, and hence the material changes in stiffness (as described). He criticises the type of boreholes drilled, but does not remark that a visual record of the weathered London Clay sub-soil (and its stiffness) was recorded in Trial Pits 1 & 4 (TP1/TP4) – an open exposure of the soil is surely the clearest way to determine the condition of the sub-strata, most geotechnical engineers would say.

In respect of groundwater levels, there was no recorded seepage in the trial pits at the interface between Made and Natural ground, as is further suggested to be relevant, and the boreholes were dry on completion. Another set of groundwater dips in mid-March, after the wettest Winter for decades, did not significantly change the 'static' phreatic groundwater surface (entirely within the London Clay strata) across the properties from that which was recorded in January 2014.

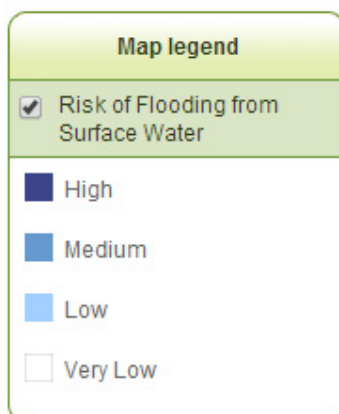
The detailed evaluation of there being a reduction of 15.6 m² in the garden area due to the new retaining wall foundations omits to make an allowance for wall concrete foundations already in the ground (thus reducing inflows, by the same argument), and the addition of a sedum roof to the rear, causing a net decrease of 16 m² in hard covering than at present (last paragraph of 3.4.1.5 in BIA).

In any event, a common point for many of these statements is that the BIA makes an assessment of factors that need to be considered in the more detailed design (structural and geotechnical) and architectural work, post-Planning. The BIA is not a design document/calculation itself, albeit it does give 'outline' heave and settlement figures in order to assess potential structural damage categories.

Comment is made about the flooding to No.37 property in previous heavy rainstorm events, and that the BIA lacks detail on this and on the foundations of No.37 along the flank wall. Comments are made in several places in the BIA about these aspects and their potential causes (3.4.1.8, 3.4.8.4 and 3.4.6; the 'omitted' TP3), but the inability of the neighbouring property to provide access to evaluate these details during the site investigation has meant that our BIA comments have had to become 'generalised' pending a Party Wall Agreement. Again, provision of a technical means to relieve potential groundwater ingresses (a bypass) is called into question, but has been set out as an option that may be needed (and has been designed by Mr. Gabriel for the basement at 85SHP).

The Environment Agency published a new map of surface water flood modelling on its website earlier this year, formally called 'Risk of Flooding from Surface Water'. From work on other projects this map has generally been found to be the most detailed and plausible model currently available.

An enlarged extract of the map is presented below for the SHP area which shows no flooding (or to be precise 'Very Low' risk of flooding) in the rear gardens of any of the properties in the part of SHP of current interest.



Keith Gabriel's comments on Eldred report

Michael Eldred states that the BIA has been prepared by “a geologist and a geotechnical engineer” (para. 31). Reference to Mike Summersgill's qualifications should have shown Mr Eldred that Mike Summersgill's qualifications include C.WEM and FCIWEM, in addition to his MSc in Geotechnical Engineering; he is a leading hydrologist and happens to be the current President of CIWEM.

Michael Eldred's report states that the BIA methodology includes “*use it {the information gathered} to produce a satisfactory and justified engineering design*” and “*submit the design for assessment...*” (paragraph 25 and similar in 32). This shows a mis-understanding of the role of Basement Impact Assessments (BIAs) in the planning process, which should not be confused with BIAs undertaken for final design (such as may be required for Party Wall Agreement negotiations and approvals by freeholders).

BIAs which are carried out as part of the planning process, and specifically those carried out in compliance with LBC's DP27 and CPG4, are not full design reports. CPG4 states (paragraph 2.24) that the Stage 4 impact assessment “*is concerned with evaluating the direct and indirect implications of the proposed project. Essentially this involves a comparison between the present situation (the baseline) with the situation as it would be with the basement in place (i.e. constructed). Therefore the BIA should describe, quantify and then aggregate the effects of the development on those attributes or features of the geological, hydrogeological and hydrological environment which have been identified (in the scoping stage) as being potentially affected.*” This is not design, but is still a valuable part of the planning process which is intended to assist planning officers to make informed decisions.

Ecologia, in common with many other BIA providers, have not been retained to design the proposed basement scheme so the BIA report is unavoidably an advisory document which the structural engineers and architects should use when developing their scheme designs. However, Ecologia have had the opportunity to comment on some of the design documents and some revisions have been made by BTA in response, so a collaborative approach has generally been taken.

We agree with Mr Eldred that the lack of access restricted the choice of excavation (drilling) methods used (para. 37). However we are dealing with a site underlain by London Clay which is probably the most studied and understood natural soil in the world. As a result, it is appropriate to undertake an investigation which assesses whether typical London Clay conditions are present, which is what was found. If abnormal conditions had been found then further, more detailed investigation would have been recommended to the client. This approach and these site investigation methods have been used successfully on numerous basement projects in London Clay and are therefore considered to be entirely reasonable.

The strength tests were not made on “heavily disturbed samples” (para. 34); they were undertaken on the in-situ clay with the vane pushed into the ground below the bottom of the borehole (ie: below any disturbance cause by the auger). The vane test measures the ‘material strength’ of the clay, not the ‘mass strength’ so does not allow for the effect of fissures in the clays; this is well known and is routinely allowed for by geotechnical engineers.

The allegation that the investigation “borders on the irresponsible” (para. 36) is strongly rejected, because the testing was carried out on in-situ clays and was **not** done on samples obtained from the

auger (which are indeed highly disturbed and would be totally inappropriate for such testing). It would be to Mr Eldred's credit if he established his facts first before making such serious allegations.

BTA have responded to Mr Eldred's comments regarding bearing capacity and we have nothing further to add.

In Section 4.3, Item (xxi) Mr Eldred states that "a formal SUDS assessment is required". This could be the subject of a planning condition, as was done for instance in relation to the basement application for 66a Goldhurst Terrace.

We agree with Mr Eldred that provision of temporary support of both the excavations and the partially completed structures is a critical part of the work (paras. 45-49) but reject his assertion that the application fails to satisfy the requirements of planning controls. The BIA identifies what is required, given the legal and contractual situation in the UK whereby the contractor is responsible for the temporary works. Submission/approval of the Contractor's method statements and temporary works design before work starts could be made a condition on the planning consent, and would provide a more powerful control than requiring preliminary designs of temporary works at planning stage (other than already covered by the CMS) which might not be followed by a contractor appointed subsequently.

The garden retaining walls have been detailed with not only weepholes but also a Filtram drainage layer on the rear face. It is therefore very unlikely that the water pressure would rise above the levels recommended in the BIA owing to the development of a gap at the back of the wall (para 62).

Various other criticisms are refuted, as follows:

- Absence of structural method statement (para. 4): BTA have provided a Construction Method Statement.
- No information on the way the ground would be supported during construction of the boundary retaining walls (para. 11): 'Open-site underpinning' (ie: panels of limited width) is specifically called for on BTA's drawing SP35-02 rev.P3 with further guidance in Notes 17-21 on that drawing, and the requirements for support of underpin excavations are described in Section 3.4.8.2 of the Ecologia BIA. It would not be appropriate to include in the BIA a full 'users manual' on how to carry out underpinning, as Mr Eldred would appear to want.
- No information provided regarding nearby existing subterranean development (Section 4.3, Item (xxi)): The cellar the No.37 was inspected and measured (by BTA) as recorded in Section 2.2 of the BIA; Ecologia have reported separately on the proposed basement beneath the adjoining property (No.33, as extensively identified in the BIA) and also undertook searches of the LBC planning website for details of other basement applications in the vicinity.

To conclude, we consider that Mr Eldred has mis-interpreted the role of the BIA in the planning process, as required by LBC's CPG4, and as such many of his recommendations are based on inappropriate expectations. He has made allegations based on incorrect assumptions about the investigation which are strongly refuted. Other aspects which he states are required pre-planning could be dealt with more appropriately by conditions on the planning consent.

Should you require any further information please do not hesitate to contact our office.

Yours sincerely

Dave Weller
Senior Geotechnical Engineer.
For Ecologia.