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Our Ref: 16494/L1

Dear Stuart,

10 Clorane Gardens, Hampstead, NW3 7PR –
Review of technical reports by First Steps Ltd and 'Eldreds'

Thank you for your instruction to undertake the review of the technical reports which were prepared on behalf of the neighbours to No.10 by Dr Mike de Freitas of First Steps Ltd and by Mike Eldred. I now have pleasure in presenting our findings from this review.

First Steps:

1. Paragraphs 4.1 and 17: The boreholes and trial pits undertaken at No.10 have assessed the conditions as they exist, with BH2 located adjacent to No.12's basement, so the effects of previous disturbance, if any, would have been identified. I note that the condition of the clays were assessed by three separate methods: manual examination during logging, pocket penetrometer tests (using one of the more accurate, dial gauge type penetrometers) and in-situ Standard Penetration Tests. All the data collected are recorded on the borehole logs in the factual GI report.
2. Paragraphs 4.3 and 21 to 24: Cumulative impact is specifically dealt with in paragraph 10.2.4 of the BIA (no cumulative impact was anticipated). (The house numbers referred to by First Steps in paragraph 4.3 seem to be confused – it is assumed that this was meant to refer to the proposed basement at No.10 affecting No's 8 & 12). It is not reasonable to suggest that the discrete basements on the opposite side of the road, possibly partially up-stream of No.10 relative to the likely ground water flow direction, will combine with those at No's 10 and 12 to "create an underground dam that extends from the boundary of No.16 to that of No.8" (though neither of those properties have basements as far as we are aware, so the terminology used seems to have been intended to suggest a larger area than is the case). No.5's basement is only a garage in the lower ground floor, the level of which is evident from the access ramp (see Streetview) and No.7's is also a lower ground floor (though deeper than No.5's) which was only intended to underlie part of the house and appears to be smaller than the permission allowed for (as evident from the front lightwell at least). Thus, each of the basements concerned are discrete basements which the ground water would flow, or more likely seep, round so our opinion that there should be no cumulative impact is considered to be sound.

3. Paragraph 16: The "departure of the trend of measured strengths" (referred to as "Small change in gradient" on First Steps' Figure 1) is very slight and well within the scatter that would be expected for these SPT tests. The groundwater pressures in the two boreholes (as indicated by the depths to groundwater during monitoring) were almost identical, with only 0.03-0.06m differences, so should not have caused any differences in degree of disturbance. The slight reduction of moisture content in BH2 relative to BH1, once the level difference has been allowed for, does not apply at all levels, and could equally be considered to be beneficial rather than detrimental, if indeed it does have anything to do with the construction of No.12's basement.
4. Paragraph 18: Any competent contractor with adequate experience of building basements should be amply aware of the issues which they may encounter in these ground conditions once they have been provided with the factual report and the BIA, both of which are more detailed than most such reports. It is not the role of these documents to act as a tuition manual for underpinning!
5. Paragraph 20: Monitoring is covered both in relation to groundwater (monitoring the water removed to check for fines, in Section 10.3) and structural stability (in Section 10.7). The requirement in the latter for a stop action at a given displacement is normal, and our proposed stop point at 8mm is more onerous than many propose (more typically at 10mm), which should allow additional time for the revised method statement. The possible need for temporary local backfilling to improve stability pending agreement on a revised method will be added to the BIA.
6. Paragraph 25: None of the SuDS options listed in the BIA involves discharge of more surface water into the ground, so the suggestion that such discharge will probably be included in the scheme is a fiction.
7. Paragraphs 24 & 26: It is claimed that "a number of sump pumps are operating in the vicinity"; No.8 apparently has one in its cellar and No.12 has one in its basement, where water apparently rises rapidly when the pump fails. We have never suggested that there are not high groundwater levels/pressures, and gave specific guidance on these, while the problems at No.12 suggest that the waterproofing to their basement is deficient (cavity membrane systems with sump pumps are designed on the acceptance that there will be some water ingress, but the inflows should not be sufficient to cause a rapid rise in water level if the pump fails).

Eldred – Technical Advice G1603-TA-01-E1:

1. Potential damage in the south wall of No.12: Eldred's paragraph 6 states that there is an abrupt change in foundation level between the front part of No.12's south wall and the 3.5m deep basement which forms the rear part of the same wall. Good building practice and Building Regulations Part A require foundations to be stepped where there is a marked change in level of founding conditions. The applicant should not be held responsible for issues which might arise because of deficiencies in No.12's foundations.
2. Construction sequence: This appears to relate more to ABP's method statement than to the BIA. It may be useful to note that 'high stiffness' support can be provided to underpins, using modern systems which have been developed in recent years. It is

essential that temporary support is provided to the underpins, either by propping at high and low levels or by backfilling temporarily the excavation space in front of each underpin as proposed by ABP (provided that the backfill is adequately compacted so that it provides sufficient lateral resistance), so Eldred's claim at 12.iv is totally inappropriate. "Conventional" underpinning as remedial works to differential foundation movement is not comparable with underpinning for construction of basements. Working between temporary supports is a routine operation for competent contractors. Eldred's claim (para 17) that the BIA dismisses the need for temporary support (apparently in order to satisfy DP27) is a scurrilous accusation which is completely untrue (and not the first time that he has made wildly inaccurate claims); the BIA repeatedly emphasises the need for adequate temporary support. Yes, the design is the responsibility of the contractor, but the requirements which must be met have been identified, and providing a temporary works full design/specification at this stage is pointless because the appointed contractor might well opt for a completely different system. So, unless there is a fundamental change to the UK contract law, this allocation of responsibilities will not change.

3. Potential damage in the garage of No.12: The version of ABP's Structural Design Philosophy which we have has no mention of retaining walls in open cut excavation.

4. Other matters:

   a. The difference between consistency descriptors and strength values is caused by fissuring in the clay, as mentioned in para 10.1.1 of the BIA.

   b. There has been no published research on ground movements alongside underpinning excavations, which has been acknowledged by the geotechnical director at Arup (Arup being the authors of the technical report on which CPG4 is based). The 5mm value has widely been adopted by the industry in the absence of any research and in many cases is clearly an over-estimate (because many basements have been constructed in London with no visible crack damage to the adjoining/adjacent properties). As well as raising this issue with Arup, I have asked CIRIA to consider extending their planned project on residential basements to include such research. Yes, that research will be expensive because it will involve instrumentation of a large number of basement projects (owing to the fact that the magnitude of ground movements alongside basements are dependent on both the working methods employed and the geology).

I hope this provides some reassurance to the applicants, and if you need clarification of any of these matters please do call me.

Yours sincerely

[redacted]

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