PRICE&MYERS

Consulting Engineers

30 Newman Street
London W1T 1LT
T 020 7631 5128
F 020 7462 1390
E mail@pricemyers.com
www.pricemyers.com

Maneesha Sonawane
Studio B Architects
No.3, 53 Priory Road
London
NW6 3NE

26th June 2014

Ref: 21915/BS

Dear Maneesha,

2 Oakhill Avenue – Response to Chelmer Consultancy Independent Assessment

Thank you for sending us the Chelmer Consultancy Services 'Independent Assessment of Basement Excavation Justification for Planning Application 2013/6162/P'.

We have reviewed this document and updated our report, where necessary, in response to their points that concern our Construction Method Statement (CMS).

In addition to this, I have responded to the queries raised on the CMS below for clarity, on a point by point basis and highlighted the sections in our report that address these. We have not responded directly those queries relating to the GEA Basement Impact Assessment (BIA), and would expect that GEA will respond separately to these.

> *2.1.3 – The scheme includes permeable paving for the front ramp, despite the Construction Method Statement noting that "permeable paving will not be (a) feasible solution" (CMS, Section 4.1)*

While the ground conditions are noted as not suitable for soakaway systems or permeable paving solutions that discharge directly into the ground, permeable paving solutions can be detailed with attenuation storage layers (See CMS, Section 4.1), which hold the water during peak rainfall periods.

2.2.2 (and 3.2.1.ii) – The CMS includes a 'Scoping of Issues' in Section 1.3 which considers some, but not all, of the screening questions from CPG4 and the Camden GHHS; cross-references to other parts of the CMS are provided for some responses. The omitted questions are Q8 & Q11 from the slope stability screening and Q1 & Q3 from the surface flow and flooding screening. The screening section in the BIA report considers all the questions from CPG4 and is reviewed in Section 2.3 below. The answers given by P&M to Q7 and Q10 of the slope stability screening differ from those given in the BIA, with those in the BIA being considered more appropriate.

For clarity, and to avoid doubling up on information the 'Scoping of Issues' section has been removed from the CMS, and now refers to the BIA (See CMS, Section 1.3)

2.2.3 (and 3.2.1.i) - Various aspects of the CMS are either inconsistent with other documents or technically inappropriate. The most serious of these is the statement in Section 3.3 that "The reinforced underpins … will be designed as cantilevers to avoid temporary propping during the bulk excavation". If no temporary propping is used the ground movements behind the underpins would be un-necessarily large (because some movement would be required in order to develop the resistance to sliding and over-turning) and could give an increased risk of failure of the underpins

The underpins are shown connecting to the piles, and will be designed to transfer their load in the permanent case into these. Usually, we would expect to assess the potential of movement in the next design stage, and design and detail the structure accordingly to prevent unnecessary movements. However, to satisfy the request for temporary propping, this has now been indicated as a requirement within the report and on the drawings (See CMS, Section 3.3, Section 5.1 and Appendix F)

2.2.4 – No assessment has been provided of the ground movements alongside the underpins (or the bored pile walls) in either the CMS or the BIA

Usually, we would expect this process to be completed at a later design stage, and as part of the Party Wall Agreement process. In order to assess ground movements accurately, a contractor needs to be involved so the movements can consider the proposed method of construction and the sequence in which it is to be performed.

The underpins will be tied together with reinforcement bars, and their toes will be supported on new piles so that all the vertical load in the final case will be supported on the piles (see CMS, Section 3.2). The piles will be specified to allow only minimal settlement (10mm) (see CMS, Section 5.1)

As part of the Party Wall Agreement process, levels of acceptable movement and damage would be agreed, in order to inform the final design. It is expected that this would be category 2 or below, with reference to the Burland Assessment. During the works movement would be monitored (see CMS, Section 5.1)

2.2.5 – Other aspects of the CMS which are either inconsistent with other documents, or technically inappropriate, are as follows:

a) *The Claygate Member is described as a "finely laminated brown sand and silt" (Section 2, first paragraph). Although this clearly contains a typographic error, it is distinctly misleading because the ground investigation by GEA found the Clayggate member to be predominantly clay throughout, with only occasional pockets of sand or silty sand.*

The precluding part to this sentence in the CMS noted that 'The published geological maps of the area indicate…' and continues with the description based on the geological maps. While quite a trivial point, this description has been removed from the CMS (See CMS, Section 2)

b) *(and 3.2.1.iii) Section 3.2 indicates that the existing building will be resupported "onto new reinforced concrete footings and ground beams, which distribute the load onto new piles". This is consistent with P&M's drawings No. 21915/009A which shows a 'New RC slab with thickening onto piles'. In contrast, their section drg No. 21915/20 shows steel columns supporting the flank wall (alongside the garden maisonette's living room fireplace) bearing onto an "RC strip footing" with dashed lines suggesting a break in the slab and no piles to support it. Combining strip footings and piled foundations in this way is likely to permit excessive differential settlements so is generally considered to be poor practice*

The drawing 21915/20 has been misinterpreted and the dashed lines were not intended to suggest a break in the slab. It was intended that this element was to act as an RC ground beam, spanning between piles, as noted both within Section 3.2 of the CMS and on drawing 21915/009A. For clarity, both the CMS text and drawing 21915/20 have been revised to make it clear that in the permanent case loads are transferred to the new piles (See CMS Section 3.2 and Appendix E).

c) *Sections 3.2 and 5.1 state that the piles will "provide resistance to heave". The width of the basement will vary between approximately 8m and 9m, so the stress reduction caused by excavation of the basement will extend to approximately 18m below the basement (lower ground floor) level. So unless the piles are unusually deep and appropriately reinforced they would provide only a limited resistance to anticipated heave.*

In our experience we have found piles suitable for mitigating the effects of heave. We would expect that the design of this would be developed in the next stage (as part of the technical design), and the design would be completed based on advice from the geotechnical consultant GEA, for the anticipated degree of heave. To help reduce the stresses on the structure, a collapsible formwork system would usually be detailed below the slab level. For clarity, this has now been added to drawings and referred to in the CMS text (See CMS, Section 3.2 and Appendix E).

d) *(and 3.2.1.v.) P&M's drg 21915/009A shows a retaining wall continuing along the 2/2C boundary to the rear of the bored pile wall which will form part of the lower ground floor. This wall is labelled "RC retaining wall with toe to accommodate change in level where necessary"/ This wall would conflict with the RPA for the 10m high Mimosa tree (T4) in No. 2C's garden, so is not consistent with the arboricultural report*

It is understood that this tree is no longer present, and fell down in the recent storms in early 2014. In addition to T4, T2 and T5 were also damaged and were removed. Where excavations are to take place in and around any remaining tree roots, these will be agreed with an Arboriculturist, and

it is assumed that they will need to be dug by hand protection to the root zone will be provided.(See CMS, Section 3.4).

e) *The final paragraph of Section 4.2 quotes from a report carried out by Arup for the Royal Borough of Kensington & Chelsea (RBKC) regarding the impact of subterranean development on groundwater levels and flows. As the Claygate Member does not occur within RBKC, this was technically inappropriate (similar advice is also provided in the Camden GHHS, though it relates primarily to situations where basements intersect an unconfined aquifer).*

Noted. This paragraph has been removed from the CMS.

f) *(and 3.2.1.vi.) Section 5.1 claims that "Underpinning is a quiet … process". Some aspects of underpinning are not normally quiet, such as breaking out concrete floor slabs and trimming existing footings, unless special measures are implemented. Both types of breaking out will be required for this project, so evidence of the special measures proposed by P&M should be provided in order to justify this assertion.*

It is noted and understood that the construction activities associated with demolition are noisy; however this paragraph was not intended to imply that the entire construction process would be quiet. In order to prevent this statement to be construed as misleading it has been removed from the report (See CMS, Section 5.1)

g) *Section 5.1 also states that "The piles will be specified to allow only minimal settlement (10mm) and therefore risks to adjoining owners is negligible". The 2/2C Party Wall will be supported by underpins, not piles, for which no predicated movement have been given.*

The underpins will be tied together with reinforcement bars, and their toes will be supported on new piles so that all the vertical load in the final case will be supported on the piles (See CMS, Section 3.2).

2.2.6 (and 3.2.1.vii) – In section 3.4 the CMS states that "the landscaping proposals will not alter the existing discharge volumes of the surface water run-off…". No evidence has been provided to support that assertion (see also 2.3.4 below).

The proposals for the external finishes are similar to those already on site; with a mixture of soft and hard landscaping, and the proportions of each do not vary significantly under the proposed development. However, it appears that much of the existing hard-standing on site is not drained and surface water flows currently discharge onto areas of soft landscaping.

Based on the above assumption, the existing drained area of the site (including roofs) is approximately 123m^2, and the existing undrained area of the site is approximately 417m^2.

The proposed scheme increases the drained area of the site to approximately 267m^2. The undrained area of the site decreases to 273m^2.

The surface water from the increase in drained areas will be held in attenuation storage systems, using both large volume tanks and in attenuation layers below permeable paving systems. As surface water flows from the drained area of the site will be dealt with by attenuation measures, the surface water flows into the ground are likely to be reduced. See CMS, Section 3.4 and Section 4.

I would expect that these responses are clear and satisfy the points raised in the Chelmer report.

Please let me know if you would like to discuss any of the points above further.

Yours sincerely,
for Price & Myers

Ben Sheterline
bsheterline@pricemyers.com