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Our ref DCP
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For the attention of Jenna Litherland

Dear Madam,

59 Maresfield Gardens- Audit of Revised Basement Impact Assessment December 2012

In August 2012 we were asked to comment on a series of BIA documents for 59 Maresfield Gardens which raised questions which we addressed in our letter to you of 16th September 2012.

Subsequent to that letter we have been asked to review a revised Basement Impact Assessment submission in accordance with your email dated 11th January 2013.

This letter reports the findings of our review of the revised BIA report, dated 12 December 2012, and its Appendices 1 to 5. We have also incorporated review of the additional information on movements due to wall installation and monitoring of movements which has been provided in emails from Jenna Litherland to Hilary Shields dated 15th April 2013 and 17th April 2013. We have been instructed to review the contents of these emails and advise that the applicant registers this information in the public domain.

Conclusions of review of revised BIA documents

We find that the revised documents are sufficient to satisfy the requirements for the grant of planning permission in accordance with DP27, in respect of:

- maintaining the structural stability of the building and any neighbouring properties
- avoiding adversely affecting drainage and run-off or causing other damage to the water environment and
- avoiding cumulative impacts on structural stability or the water environment in the local area

Note that this finding relates only to the basement configuration and construction sequence proposed. If there are significant changes to these during detailed design then another review would need to be conducted.

Specific comments in relation to those issues which were not adequately addressed in the previous BIA submission dated 14 May 2012

In our letter to you of 16th September 2012 we summarised the information which had not been adequately addressed for the grant of planning permission in the previous BIA submission dated 14 May 2012. In the following, we list each of the issues for which further assessment was required and give our reasons for advising that the revised information is sufficient to now satisfy the requirements for the grant of planning permission in accordance with DP27.

As is customary with any RIBA(Royal Institute of British Architects) design, the post planning design provided will evolve to detailed design phase after Planning Permission. These detailed designs will be submitted to Building Control by the applicants engineers and we have assumed that these will be code compliant and based on CIRIA C580 and /or EC7.

Where we have remaining comments which we advise will need to be addressed at a later design stage these are also included below.

Structural Stability of Neighbouring Structures

1. Predicted ground movements around the excavation with supporting analysis of the 450mm diameter secant piled walls.

Reasons for sufficiency of the revised information

- Preliminary analysis of the secant piled walls has been carried out to look at the structural effects on the wall and wall movements (BIA 5.2 and BIA Appendix 4) based on the proposed construction sequence. The proposed secant piled walls have now been increased in diameter to 600mm diameter piles installed at 900mm male to male centres (BIA 5.2), and considered likely in the BIA to be of hard/firm construction (BIA 5.1).
- An analysis of ground movements due to excavation has been carried out using the Oasys software XDisp (BIA Appendix 4). The set of empirical ground movement curves adopted in the analysis is supported by the analysis of wall movements for the proposed construction sequence.
- The typical expected magnitudes of ground movements summarised in section 6 of the BIA report and updated by the information provided on the 17th April give maximum ground movements in the vertical and horizontal directions of 12mm and 17.5mm respectively (after summing the ground movements due to wall installation and basement excavation). These movements are reasonable based on the wall analysis, which gives a maximum wall deflection of 13mm, and corresponding construction sequence information presented. The predicted ground movements are typical of well-supported excavations of similar depth and in similar ground conditions as described in CIRIA C580.

Remaining comments to be addressed at later stages of design

- The connection details between the basement box and the secant pile walls are yet to be fully designed. The vertical load transferred to the walls through the dowels from the perimeter wall (BIA Appendix 2, 3.2.1) might cause wall toe levels to vary slightly.
- We note that a suggested piling rig is the Klemm 709 rig (essentially a segmental auger CFA method of piling). We believe this is a cased system of CFA piling. If it is an uncased CFA system the piling will be workmanship dependent and it is recommended that the choice of piling contractor is made from a list affiliated with the FPS (Federation of Piling Specialists)..

2. Implications of ground movements on neighbouring structures with assessment of damage.

Reasons for sufficiency of the revised information

- An analysis of ground movements around the excavation has now been carried out using the Oasys software XDisp. This has provided contours of ground movement and also ground movement profiles along lines parallel and perpendicular to the excavation, modelled to represent ground movements along and across the adjacent structures.
- A similar analysis of ground movements due to wall installation has also been carried out (email of 17th April 2013).
- Potential movements of the adjacent structures have been quantified and a damage classification assigned based on these movements of 'negligible' or 'very slight' due to the basement excavation alone (BIA 6.0), and of "negligible" due to the wall installation alone (email of 17th April). When the ground movements due to wall installation and excavation are combined then the damage classification in the case of the east wall at 57 Maresfield gardens falls just into the "slight" damage category. CPG4 section 2.30 suggests that the category of "slight" damage may be acceptable. We note that in the email of 17th April reference is made to conservatism in the analysis. Assurance is also given that a robust monitoring regime will be in place and that in case of movements approaching the predicted values assessed in the BIA, adjustment to the propping arrangements may be made to control the movement. Whilst the assessment is sufficient for the BIA, we recommend that consideration is given during detailed design to bringing the predicted damage for this wall into the "very slight" category.
- The construction sequence has now been developed to incorporate careful consideration of the adjacent structures. The adjacent structures are now shown in the construction sequence plans and sections which enables relative levels and plan position of the existing foundations and the proposed excavation and propping to be understood . Existing ground elevations at adjacent structures are maintained throughout by replacing excavated ground with a propped wall at the same elevation. Above ground, the lateral stability of adjacent structures is proposed to be provided through temporary works as required.
- Consideration has been given to the proximity of the secant wall to the foundations of 57 Maresfield Gardens and the boundary wall with 40 Netherhall Gardens to provide a clear distance of 150mm between the foundation and the face of the secant piled wall. Trial pits are recommended before piling to confirm the footing dimensions along the length of the walls (Appendix 2, 4.4).

- There is an acknowledgement that the existing party wall may need to be propped during the works and design checks for wind loading need to be carried out to establish if permanent propping is required (Appendix 2, 4.3.4).
- The stability of the remaining part of the existing retaining wall past 57 Maresfield Gardens is safeguarded by propping during construction and tying it into the new basement walls in the long term.
- The secant piled wall behind the existing retaining wall, where it runs past 59 Maresfield Gardens, will be constructed from a temporary piling platform (scaffolding or similar) constructed within the boundary of 59 Maresfield Gardens. There will therefore not be any piling platform fill to slope laterally across the front of 57 Maresfield Gardens and so load that property.
- A CCTV condition survey of the sewer beneath Maresfield Gardens roadway is included (BIA Appendix 2.4) which indicates the current level of damage which can be used as a pre-construction benchmark

Remaining comments to be addressed at later stages of design

- We recommend that during detailed design the design and construction details are refined so that the predicted category of damage for all adjacent structures falls into the category of "very slight".

3. Stability of the sloping verge and roadway for Maresfield Gardens

Reasons for sufficiency of the revised information

- The construction sequence drawings show that the new secant piled wall will be directly behind the existing retaining wall. It will therefore derive support from the existing wall initially.
- If the foundations of the existing retaining wall need to be cored through prior to piling, then the existing wall will be propped laterally (Appendix 2, 4.4.3).
- The existing wall will not be demolished until the new secant piled wall has been propped at the top

4. Preliminary pile toe levels for the secant piled wall and potential rotational failure of the retained ground.

Reasons for sufficiency of the revised information

- Preliminary wall toe levels have been provided (+70mOD for the structural (male) piles, +72.5mOD for the female piles).
- The wall toe level is therefore at least 4m below the deepest excavation to +74mOD which is a reasonable embedment to guard against rotational failure
- This embedded depth may also increase in the final design depending on the vertical loads from the structure.

5. Preliminary proposals for monitoring of adjacent structures and consideration of contingency measures if movements start to exceed predefined levels.

Reasons for sufficiency of the revised information

- The revised BIA and supplementary information now provides a commitment for monitoring movements of the new secant wall and adjacent buildings, in accordance with the Camden Geological, Hydrogeological and Hydrological Study section 7.2.3. A specification for instrumentation and monitoring will be developed for the project and this should be provided to the 3rd Party surveyors. The applicant states that the Specification will include trigger limits and contingency plans (e.g. additional propping) should movements approach these limits during the course of excavation.
- Condition surveys of the adjacent structures will be carried out before and after the works or as agreed with 3rd party wall surveyors .

Remaining comments to be addressed at a later stage

- A detailed method statement for the basement construction needs to be developed alongside the monitoring so that each element of activity can be assessed with respect to movements.

Surface Water and Groundwater Flow

6. Storm water disposal

Reasons for sufficiency of the revised information

- Previously there was insufficient information on storm water disposal . This has now been dealt with in more detail in Appendix 2 of the revised BIA. A surface water strategy (which includes rainwater harvesting tanks, surface water sump and pumping) and a CCTV survey report have been provided.

7. Hydrogeological interpretation, groundwater levels and flows

Reasons for sufficiency of the revised information

- A revised groundwater assessment for the proposed development has been undertaken by Cord Environmental Ltd (Ref: 3111336, dated 12/11/2012) and is included in Appendix 3 of the Basement Impact Report. It includes additional data on the geology, hydrogeology, groundwater levels and flow direction at the site and the potential impacts have been identified.
- The groundwater monitoring record now spans a year of monitoring (Dec 2011 & Oct 2012) and covers a very dry and very wet period. The data indicates small fluctuations in groundwater levels in the Claygate Beds.
- The overall conclusions are clear – that the proposed basement is surrounded by very low permeability material and that groundwater impacts are likely to be minimal.

I hope that this letter will assist you in reaching your decision.

Yours faithfully

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Director
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