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32 Glenilla Road
London, NW3 4AN

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 13398-26

Revision: F1

May 2021

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Document History and Status

Revision	Date	Purpose/Status	File Ref	Author	Check	Review
D1	June 2020	For comment	KBemb13398-26-04062020-32 Glenilla Road-D1.doc	KB	EMB	EMB
F1	May 2021	For planning	KBemb13398-26-24052021-32 Glenilla Road-F1.doc	KB	EMB	EMB

Document Details

Last saved	24/05/2021 16:58
Path	KBemb13398-26-24052021-32 Glenilla Road-F1.doc
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Project Number	13398-26
Project Name	32 Glenilla Road, London, NW3 4AN
Planning Reference	2016/6712/P & 2020/1842/P

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1.0 INTRODUCTION

1.1. CampbellReith was instructed by London Borough of Camden, (LBC) to carry out an audit on a revised Ground Movement Assessment submitted as part of the Planning Submission documentation for revisions to a previously granted scheme at 32 Glenilla Road, London NW3 4AN (planning reference 2020/1842/P, original planning reference 2016/6712/P). The basement is considered to fall within Category B as defined by the Terms of Reference.

1.2. The Audit reviewed the updated Ground Movement Assessment (GMA) for potential impact on land stability arising from basement development in accordance with LBC's policies and technical procedures. Impacts to local ground and surface water conditions are presented in the original audit report by CampbellReith, ref. HPgk12466-46-05072017-32 Glenilla Road-F1, dated 05 July 2017.

1.3. CampbellReith was able to access LBC's Planning Portal and gain access to the following relevant documents for audit purposes:

- Letter Report by Card Geotechnics Ltd, ref. CG/18516c, dated 5 March 2020.
- Design and Access Statement by Adam Kahn Architects, dated 22 April 2020.
- Planning Application drawings including proposed plan and section drawings.
- Basement Comparison Sketch by Price and Meyers, ref. 24357-SK019, rev 1, dated 13 March 2020.

1.4. The following additional documents were provided to CampbellReith in response to the queries raised in Appendix 2:

- Letter Report by Card Geotechnics Ltd, ref. CG/18516c, dated 17 May 2021.
- Pile Installation Case Studies Summary Worksheet by Card Geotechnics Ltd, dated April 2021.
- Method Statement by Golden Houses Developments Ltd, dated 13 May 2021.

1.5. The changes to the original scheme comprise reducing the pile diameter from 450mm to 300mm, slight alterations to the footprint of the building, lowering the basement slab by 300mm, and the inclusion of two pump tanks below the basement slab.

1.6. The updated GMA has been prepared by Card Geotechnics Ltd and the authors possess suitable qualifications that comply with the requirements of CPG4.

1.7. The revised GMA indicates that damage to adjacent structures will not exceed Burland Category 1 (Very Slight).

1.8. A monitoring strategy for adjacent structures has been provided. Appropriate trigger levels, based on the results of the GMA, should be agreed as part of any party wall award.

1.9. The revised submission suitably addresses the queries in Appendix 2. The GMA is considered to meet the criteria of CPG Basements.

2.0 DISCUSSION

2.1. The updated Ground Movement Assessment (GMA) has been prepared by Card Geotechnics Ltd (CGL) and authors possess suitable qualifications that comply with the requirements of CPG4.

2.2. The revised proposal comprises the following:

1. Slight adjustments to the layout of the building footprint.
2. Reducing the pile diameter from 450mm to 300mm.
3. The lowering of the basement slab formation level by 300mm. Top of slab level is given as 58.522m OD and the slab is indicated to be 400mm thick.
4. The inclusion of two pump tanks below the basement slab. Top of slab level is given as 56.25m OD and the slab is indicated to be 400mm thick.
5. Additionally, a previous change to the basement scheme that extended the basement footprint towards the road by c. 1.5m was made without a corresponding revision to the BIA. The impact of this change has also been addressed in this audit.

2.3. A review of the submitted drawings shows the change to the basement footprint will not bring the line of the contiguous pile wall closer to the neighbouring building than the original scheme.

2.4. The GMA only considers the impact to No. 34 Glenilla Road, as the property at No. 30 is due to be demolished and rebuilt with a piled basement level. The revised GMA submission confirms that the building at No. 30 has now been demolished.

2.5. Table 1 of the updated GMA presents the soil parameters used in the analysis. The values correlate with those used in the original BIA and GMA, with the exception of the Young's modulus, which has been increased by 66%. The revised GMA submission clarifies that these higher soil parameters represent the lateral (horizontal) Young's Modulus values instead of vertical Young's Modulus values, which were used in the original assessments.

2.6. The GMA adopts the assumption that ground movement associated with wall installation can be reduced by 50% of that recommended in CIRIA C760 (to 0.02% of wall depth) based on a case study presented by Ball, Langdon and Creighton. A summary of case study data collected by CGL has been provided to support the assertion that smaller movements due to pile installation than those predicted following CIRIA C760 are observed. On the basis of this case study data, the reduction to the ground movements due to pile installation is accepted.

2.7. An assessment using Wallap software has been carried out for the new proposed basement depth. An analysis has also been carried out for the deeper excavation for the pump tank. The

top of pile level for the pile wall is given as 61.30m OD with a corresponding pile length of 10m. The Wallap analysis uses an excavation level of 57.77m OD for the basement and a level of 55.61m OD for the pump tank.

2.8. The lateral movement of the walls, predicted by the Wallap analysis, were used to empirically calculate the vertical movements using the method described in Figure 6.17 of CIRIA C760.

2.9. The original BIA suggested that the ground movements derived from Wallap have been reduced by 50%, which is justified by reference to 'a case study in C760'. Reducing movement on the basis of one case study is not considered a moderately conservative approach and it should be noted that the text in CIRIA C760 that precedes the case study referenced, states that "Further work is necessary before reliable correlations can be established for general application". The revised submission confirms that no reduction has been applied to the analysis.

2.10. The displacement profile graphs in Plates 3 and 4 include a line representing lateral displacement from the BIA revision 5. The BIA Audit completed by CampbellReith was based on Revision 4 of the BIA, dated May 2017. The subsequent BIA Revision 5 is dated September 2017 and has not been audited by CampbellReith.

2.11. The audited BIA for the previous scheme assessed critical section length of 5.8m, which relates to the length of an existing basement at No. 34, and the off-set from the pile wall is given as 1m. The revised submission now also considers this critical section and the location of the section is shown on Plate 1.

2.12. The revised GMA submission gives the height and length of No. 34 to support the use of the damage category profile for L/H=0.5 in Plates 5 and 8.

2.13. The revised GMA indicates that the excavation of the deep chambers will result in ground movements not exceeding Burland Category 1 (Very Slight) damage to neighbouring structures.

2.14. The revised GMA submission now includes an assessment of the impact to the adjacent highway based on changes to the basement footprint that were made after the previous BIA audit. The ground movements are indicated to be no more than 7mm, which the GMA indicates to be negligible.

2.15. A monitoring strategy is provided in the Golden Houses Method Statement. Trigger levels and actions are not provided, but should be based on the results of the revised GMA and agreed as part of the party wall award.

2.16. The revised submission addresses the queries presented in Appendix 2. The GMA is considered to meet the criteria of CPG Basements.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status/Response	Date closed out
1	Stability	Soil parameters and the assumptions used in the ground movement assessment should be revised to ensure a moderately conservative assessment is undertaken, as required by LBC.	Closed	18/05/21
2	Stability	The geometry and location of the critical section used in the ground movement assessment should be clarified.	Closed	07/12/20
3	Stability	Further information is required to support the use of an L/H=0.5 in the damage category assessment.	Closed	07/12/20

Appendix 3: Supplementary Supporting Documents

None

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