

40 Frogna Lane
London, NW3 6PP

Basement Impact Assessment
Audit

For
London Borough of Camden

Project Number: 13398-80

Revision: D1

March 2021

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Document Details

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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 40 Frognal Lane, London NW3 6PP (planning reference 2020/4453/P, original planning reference 2014/5915/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. AJMav12336-47-030517-40 Frognal Lane-F1, dated 03 May 2017.
- 1.3. CampbellReith was able to access LBC's Planning Portal and gain access to the following relevant documents for audit purposes:
 - Ground Movement Assessment by Fairhurst, ref. 141396/R1.1, dated 16 February 2021.
 - PDisp input and output data by Fairhurst, dated 01 March 2021.
 - Basement Impact Assessment by Train and Kemp, rev 06, dated April 2017.
 - Design and Access Statement by RM Architects, dated September 2020.
 - Planning Application drawings including:
 - Proposed Site Layout, dated March 2020,
 - Basement Pool Proposed Plan, ref 138, dated September 2020,
 - Main Stair Section – Internal, Existing and Proposed, ref 142, dated July 2020,
 - Basement Pool Sections, ref 143 and 144, dated September 2020.
- 1.4. Since the time of the original BIA audit the Camden Local Plan has been adopted. As such, the revised scheme requires a further impact assessment to be completed to ensure compliance with Camden Council policy.
- 1.5. The GMA has been prepared by Fairhurst and the individuals involved in its production possess suitable qualifications.
- 1.6. The GMA indicates that damage to neighbouring structures or the listed host building will not exceed Burland Category 1 (Very Slight).

- 1.7. Based on the data submitted it can be confirmed that the GMA complies with the requirements of CPG: Basements.

2.0 DISCUSSION

- 2.1. The updated Ground Movement Assessment (GMA) has been prepared by Fairhurst. Subsequent e-mail correspondence (presented in Appendix 3) confirms that the individuals involved possess suitable qualifications.
- 2.2. The GMA identifies the property at no. 40 Frognal Lane is a Grade II listed building and has an existing lower ground floor level.
- 2.3. The proposed development comprises the construction of a basement level swimming pool below the existing garden. The basement will be formed using a secant piled wall and will measure 23.2m long and 6.2m wide. The maximum excavation is given as 7.5m, which is based on the level of the deep end of the pool (86.5m OD) and the highest elevation within the existing garden (94.0m OD).
- 2.4. A site investigation was undertaken at the site in 2011 and indicated that the site is underlain by Made Ground over Claygate Formation to 5.1m to 5.6m depth, with London Clay soils below. This site investigation has been used to derive soil parameters for use in the GMA. These parameters are presented in Table 4.1 and are considered appropriate for the ground conditions encountered.
- 2.5. An assessment has been carried out using PDisp software to estimate vertical ground movements likely to arise as a result of the excavation and subsequent basement construction. Three stages were assessed; short term unloading from bulk excavation of the basement, short term loading from construction of the basement swimming pool, and long term loading for the completed development.
- 2.6. XDisp software was used to carry out a Building Damage Assessment (BDA) for three structures adjacent to the proposed basement, following the guidance provided in CIRIA C760. The BDA assessed the same three structures that were considered in the original BIA: the west wall of no. 40 Frognal Lane, the east wall of no. 38 Frognal Lane and the boundary retaining wall between these two properties. The results of the PDisp assessments were also imported to XDisp and considered as part of the BDA.
- 2.7. The results of the BDA indicate that the anticipated damage to the neighbouring structures will not exceed Burland Category 1 (Very Slight). The BDA did not assess any other walls or structures within No. 40 Frognal Lane, however it was clarified in e-mail correspondence (Appendix 3) that the movements calculated for the wall assessed could be considered comparable to the movement experienced by other walls within the building.

- 2.8. The length of the piles forming the basement was not known at the time of the assessment, therefore, for the purposes of the BDA, a toe level of 5m below the basement level was assumed, at 81.5m OD. If, following detailed design of the piles, the toe level is significantly deeper than this, the GMA will need to be revised to confirm that the impact to adjacent structures remains within acceptable limits.
- 2.9. Based on the documents submitted it can be confirmed that the GMA complies with the requirements of CPG: Basements.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

None

Appendix 3: Supplementary Supporting Documents

E-mail correspondence



RE: 40 Frognal Lane GMA

Jessica Cheng to: KatharineBarker@campbellreith.com 01/03/2021 15:31

History:

This message has been replied to.

Hi Kat,

Hope you are well. Yes, Derek and I are both CEng MICE qualified while Phil is CGeol qualified. Do you need our membership numbers?

Thanks,
Jess

From: KatharineBarker@campbellreith.com <KatharineBarker@campbellreith.com>

Sent: Monday, March 1, 2021 2:35 PM

To: Jessica Cheng <jessica.cheng@fairhurst.co.uk>

Subject: 40 Frognal Lane GMA

Hi Jessica,

I've been passed the ground movement assessment to audit for this property and notice that the qualifications of the Author/Checker/Approver haven't been provided. LBC requires that during the BIA process the ground movement assessment should have input from an individual who holds a CGeol or CEng qualification. Could you confirm whether Derek Finlay, Phil Brown or yourself hold either of these?

I haven't finished my audit, so there may be other queries relating to the assessment, but this seemed like a simple one to close out through a quick e-mail.

Kind regards,

Kat

Katharine Barker
Senior Geotechnical Engineer

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141396 - RE: 40 Frognal Lane GMA

John Lau to: KatharineBarker@campbellreith.com 15/03/2021 18:25

Cc: "camdenaudit@campbellreith.com", "Jessica Cheng", "John Paleomyllites", "Josh.Lawlor@camden.gov.uk", "richard@rm-architects.com"

Dear Katharine

Thanks for your email below.

Your comments were discussed with Josh Lawlor at Camden, in particular to the request for carrying an additional check and he has responded that :

"With the permitted category of damage reducing from Burland Category 2 to Burland Category 1, it is sometimes the case that other walls become susceptible to potentially exceeding the permitted damage category. While Campbell Reith are of the view that BIA should consider the potential damage to this additional wall, the assessment could be a simple statement based on the analyses done to date."

As per Josh's comments, we would therefore like to state that based on our recent analysis undertaken as part of the updated ground movement assessment for the proposed basement, we see no reason why the DC-1 classification calculated for the closest and therefore assumed most critical existing boundary walls would not be equally applicable to other boundary and internal walls and parts of the structure at No. 40 that are further away from the proposed basement compared to those considered to date.

Our current assumptions did not take into account any historic load induced ground movement that may already have taken place, which will have contributed positively to the geotechnical parameters through strain hardening of the ground supporting the building structure. The stiffness of the internal wall and/or propping system in conjunction with the deeper foundations of these walls will also control and mitigate ground movement more effectively, therefore keeping the damage category to DC-1.

We trust that this now addresses your queries and look forward to the subsequent approval of our assessment.

Regards

John Lau
Partner

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Sent: Monday, March 8, 2021 3:07 PM

To: Jessica Cheng <jessica.cheng@fairhurst.co.uk>

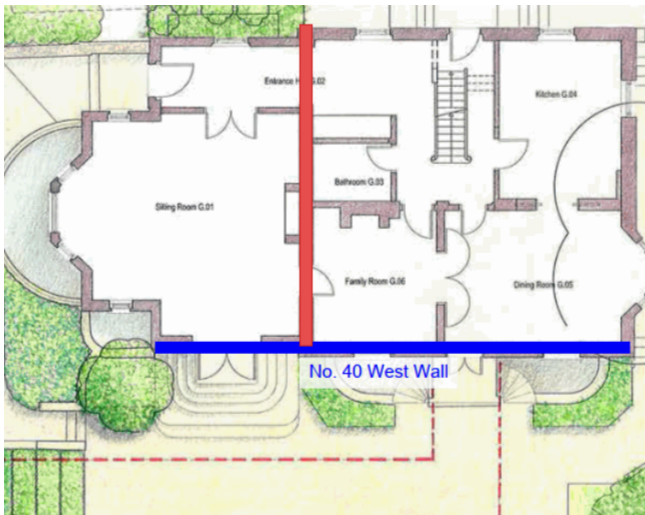
Cc: camdenaudit@campbellreith.com

Subject: RE: 40 Frognal Lane GMA

Jess,

Thanks for these files. I have one further request, which I thought it would be easier to e-mail you about directly than go through the process of issuing our audit as draft with queries etc.

The wall assessed for No. 40 is parallel to the basement excavation. Due to the nature of the ground movements anticipated from the basement construction, the greatest deflection ratios (and therefore most critical section) would occur perpendicular to the basement. The red line below is an example of where we would expect the greatest deflection ratio to occur.



Would it be possible for you to run an XDisp analysis for this section line, to confirm that the damage category remains below Category 1?

We would accept an assessment using XDisp only for this, to save time setting up anything new in PDisp. The reason for this is that the ground movement curves used in XDisp (from CIRIA C760) are based on measured site data, and therefore are likely to have captured all elements of movement that occur during pile installation and basement excavation.

Kind regards,

Kat

Katharine Barker
Senior Geotechnical Engineer

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