

44 Downshire Hill
London, NW3 1NU

Basement Impact Assessment
Audit

For
London Borough of Camden

Project Number: 12466-16

Revision: D1

November 2016

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1.0 NON-TECHNICAL SUMMARY

- 1.1. CampbellReith was instructed by London Borough of Camden, (LBC) to carry out an audit on the Basement Impact Assessment submitted as part of the Planning Submission documentation for 44 Downshire Hill (planning reference 2016/3204/P). On the basis of the BIA, the basement was considered to fall within Category A as defined by the Terms of Reference, however, a review of the proposals identified potential impacts on surrounding structures. As such, it is considered the development is within Category B.
- 1.2. The Audit reviewed the Basement Impact Assessment for potential impact on land stability and local ground and surface water conditions arising from basement development in accordance with LBC's policies and technical procedures.
- 1.3. CampbellReith was able to access LBC's Planning Portal and gain access to the latest revision of submitted documentation and reviewed it against an agreed audit check list.
- 1.4. The authors of the Basement Screening Assessment (BSA) possess the relevant qualifications required by CPG4.
- 1.5. The property to be developed is a listed semi-detached house which includes an existing basement level. It is proposed to underpin the existing walls of the building, in order to stabilise historical settlement issues, and lower the existing basement slab to restore adequate headroom.
- 1.6. Trialpits have been excavated within the basement which have identified inadequate existing brick foundations founded in Firm London Clay.
- 1.7. A Ground Movement Assessment has been undertaken which shows that a Burland Damage Category of 1 (Very Slight) may potentially occur. CPG4 requires that mitigation measures are proposed which should be accompanied by details of underpinning, an underpinning bay layout, an indicative temporary works scheme, methodology of basement slab replacement, a movement monitoring proposal and an indicative works programme.
- 1.8. Additional information has been provided which has confirmed that partial underpinning of the property is intended without underpinning the Party Walls. The Heritage Statement has identified that adjacent properties have already been underpinned. These issues should be considered further.
- 1.9. It is accepted that there are no hydrogeological concerns and no hydrology concerns with the development proposals.

- 1.10. On figure 16 of Arup's GSD the site is indicated as being within a hillside setting of 7-10°. This requires further discussion.
- 1.11. Queries and requests for further information arising out of this initial audit are discussed in Section 4 and summarised in Appendix 2.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 10 October 2016 to carry out a Category A Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 44 Downshire Hill, London NW3 1NU, Camden Reference 2016/3204/P.
- 2.2. The Audit was carried out in accordance with the Terms of Reference set by LBC. It reviewed the Basement Impact Assessment for potential impact on land stability and local ground and surface water conditions arising from basement development. Due to the issues arising, it is now considered that the development falls within Cat B.
- 2.3. A BIA is required for all planning applications with basements in Camden in general accordance with policies and technical procedures contained within
- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.
 - Camden Planning Guidance (CPG) 4: Basements and Lightwells.
 - Camden Development Policy (DP) 27: Basements and Lightwells.
 - Camden Development Policy (DP) 23: Water
- 2.4. The BIA should demonstrate that schemes:
- a) maintain the structural stability of the building and neighbouring properties;
 - b) avoid adversely affecting drainage and run off or causing other damage to the water environment; and,
 - c) avoid cumulative impacts upon structural stability or the water environment in the local area.
- and evaluate the impacts of the proposed basement considering the issues of hydrology, hydrogeology and land stability via the process described by the GSD and to make recommendations for the detailed design.
- 2.5. LBC's Audit Instruction described the planning proposal as *"Demolition and rebuilding of the front steps and lobby, underpinning main walls and foundations, reducing basement floor level by 300mm and associated internal alterations."*

The Audit Instruction also confirmed the proposal involved a Grade II listed building, is neighbour to a listed building and is within the Hampstead Conservation Area.

2.6. CampbellReith accessed LBC's Planning Portal on 27 October 2016 and gained access to the following relevant documents for audit purposes:

- Basement Screening Assessment (BSA) by MLM Consulting Engineers dated August 2016
- Existing and Proposed Plans and Sections comprising:

Drawing Nos 53021/10, 6: 53035/3; 53036/2, 3;53039/1, 2

By Claymore Design & Build
- Heritage Statement by Boyer dated June 2016
- Additional email from MLM dated 31 October 2016, which has been included in Appendix 3.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	BSA Front Cover.
Is data required by Cl.233 of the GSD presented?	Yes	
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	
Are suitable plan/maps included?	Yes	Development proposals provided but no Camden SFRA map extracts.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	See BSA Section 3.3. Arup GSD Figure 16 indicates hillside setting of 7-10°.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	See BSA Section 3.2.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	See BSA Section 3.1.
Is a conceptual model presented?	No	Required.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	Discussion of wider hillside setting required.

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	N/A	
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	N/A	
Is factual ground investigation data provided?	Yes	See BSA Appendix A.
Is monitoring data presented?	No	
Is the ground investigation informed by a desk study?	No	
Has a site walkover been undertaken?	No	
Is the presence/absence of adjacent or nearby basements confirmed?	No	Drawings indicate existing basements to adjacent buildings.
Is a geotechnical interpretation presented?	Yes	See BSA Section 2.2 and 4.2.
Does the geotechnical interpretation include information on retaining wall design?	No	
Are reports on other investigations required by screening and scoping presented?	N/A	
Are baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	No	
Is an Impact Assessment provided?	Yes	Ground Movement Assessment
Are estimates of ground movement and structural impact presented?	Yes	See BSA Section 4

Item	Yes/No/NA	Comment
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	Temporary works/propping/sequence to be provided.
Has the need for monitoring during construction been considered?	No	
Have the residual (after mitigation) impacts been clearly identified?	No	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Temporary works/propping/sequence to be provided. Effects of partial underpinning to be examined.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	Temporary works/propping/sequence to be provided.
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	Yes	
Are non-technical summaries provided?	Yes	See BSA Executive Summary.

4.0 DISCUSSION

- 4.1. The Basement Screening Assessment (BSA) has been produced by MLM Consulting Engineers and the authors possess the relevant qualifications required by CPG4.
- 4.2. The property to be developed comprises a part four storey, part three storey building forming a listed semi-detached pair of houses with No.45. Access to the property from Downshire Hill is via steps up to the Ground Floor and steps down to the Basement (Garden) Floor.
- 4.3. Although not stated in the BSA text, from a note identified on Claymore Design & Build drawing no.53036/2, Section M-M, the property appears to have suffered from historical settlement issues resulting in the ground floor dropping 22mm since monitoring commenced in 1985.
- 4.4. The BSA refers to 10 no. trial pits, carried out in February 2016 by Claymore, within the existing Basement Floor slab to investigate the form of foundations and their bearing strata. These identified predominantly soft brick, stepped footings founded in Firm London Clay and are approximately 0.5m wide and 0.4m below existing basement floor level. All trial pits excavated were found to be dry.
- 4.5. It is proposed to underpin the existing foundations and widen the footings in order to “stabilise the building and replace the existing, inadequate foundations.” As part of these works, it is intended to lower the Basement (Garden) Floor level by 300mm, in order to restore the headroom. The BSA states that Claymore drawings indicate a depth of underpinning of 1.08m and refers to a Claymore drawing no. 53031/1 providing a layout of the underpins. This drawing does not form part of the submitted information.
- 4.6. Although there is no discussion within the BSA of the presence of adjoining basements within the terrace, it is assumed from Claymore’s existing elevations drawing no. 53021/6 that similar basements to No.44 exist at Nos. 43 and 45.
- 4.7. A Screening exercise has been undertaken in accordance with CPG4 requirements which confirms there are no known ponds, springlines or wells in close vicinity to the site and the site is outside the Hampstead pond chain catchment area. It is accepted that the site is not in an area known to be at risk from surface water flooding and there will be no variation to existing flows into the foul and surface water drainage system.
- 4.8. The Screening exercise incorrectly gives a “No” response to Slope Stability Question 13 – Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties? As an underpinning depth of at least 1.08 metres is proposed, the response should have been Yes or to be Determined. Nevertheless, a Ground Movement

Assessment has been carried out and it is accepted that this shows that a Burland Damage Category of 1 (Very Slight) may potentially occur.

- 4.9. The MLM email stated that “based upon the assessment presented in Section 4.5 of our report, the potential category of damage will be 0-Negligible.” CampbellReith has carried out an independent assessment and confirms this statement is incorrect and that the previous MLM assessment of Category 1 is correct.
- 4.10. In this situation, CPG4 requires that mitigation proposals are provided and these are requested. Underpinning details, intended bay layout, indicative temporary works (propping) scheme and methodology of basement slab replacement should also be provided together with a movement monitoring proposal and a works programme as required by cl.233 of the Arup GSD.
- 4.11. MLM were contacted in order to discuss the “missing” information discussed in item 4.5 and an email was subsequently received on 31 October 2016 (included in Appendix 3) containing additional Claymore drawings nos. 53031/1, 53025/1 and 53025/3. Drawing no. 53031/1 shows an underpinning sequence, which is acceptable, but appears to indicate that only the front and rear walls, together with internal loadbearing walls, are to be underpinned but not either Party Wall with Nos. 43 and 45. It is not considered “good practice” to undertake partial underpinning of a property due to the likelihood of differential settlement occurring.
- 4.12. The Heritage Statement identified in item 3.2 that “many of the properties within Downshire Hill, including numbers 43 and 45, and St. John’s Church, have received consents for structural underpinning due to extensive subsidence and structural failure.” It is noted that Listed Building consent has been granted but it is requested that items 4.10 and 4.11 are considered further.
- 4.13. The slope stability screening question 4 – is the site within a wider hillside setting in which the general slope is greater than 7° ? – has been considered “no”. Arup’s GSD figure 16 indicates the surrounding area to be within a slope of 7-10°. This should be further discussed in scoping.
- 4.14. As no site specific investigation has been undertaken insitu testing during construction should confirm shear strength of London Clay is the same/greater than design requirements.

5.0 CONCLUSIONS

- 5.1. The authors of the Basement Screening Assessment (BSA) possess the relevant qualifications required by CPG4.
- 5.2. The property to be developed is a listed semi-detached house which includes an existing basement level. It is proposed to underpin the existing walls of the building, in order to stabilise historical settlement issues, and lower the existing basement slab to restore adequate headroom.
- 5.3. Trialpits have been excavated within the basement which have identified inadequate existing brick foundations founded in Firm London Clay.
- 5.4. A Ground Movement Assessment has been undertaken which shows that a Burland Damage Category of 1 (Very Slight) may potentially occur. CPG4 requires that mitigation measures are proposed which should be accompanied by details of underpinning, an underpinning bay layout, an indicative temporary works scheme, methodology of basement slab replacement, a movement monitoring proposal and an indicative works programme.
- 5.5. Additional information has been provided which has confirmed that partial underpinning of the property is intended without underpinning the Party Walls. The Heritage Statement has identified that adjacent properties have already been underpinned. These issues should be considered further.
 - Discussion of the wider hillside setting around the site should be presented, assessing any risks/impacts.
- 5.6. It is accepted that there are no hydrogeological concerns and no hydrology concerns with the development proposals.
- 5.7. Due to the issues arising from the proposed works and BIA, the scheme is considered to fall within Category B, in accordance with LB Camden's Terms of Reference.
 - During construction, insitu testing of London Clay should confirm sufficient shear strength as per design requirements
 - Until the additional information requested is provided, it is not possible to assess that the BIA meets the criteria of CPG4. Queries and requests for information are summarised in Appendix 2.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

None

Audit Query Tracker

Query No	Subject	Query	Status	Date
1	Stability	GMA mitigation measures requested	Open – to be provided	
2	Stability	Underpinning details requested	Open – to be provided	
3	Stability	Underpinning bay layout requested	Open – to be provided	
4	Stability	Indicative temporary works scheme requested	Open – to be provided	
5	Stability	Methodology of basement slab replacement requested	Open – to be provided	
6	Stability	Movement Monitoring proposal requested	Open – to be provided	
7	Stability	Indicative Works Programme requested	Open – to be provided	
8	Stability	Partial underpinning and potential existing underpinning to adjacent properties to be considered	Open – to be provided	
9	Stability	Discussion of wider hillside setting considering risks/impacts	Open – to be provided	
10	Stability	Provide a conceptual site model	Open – to be provided	
11	Stability	During construction, shear strengths of the London Clay should be confirmed by insitu testing	N/A	

Appendix 3: Supplementary Supporting Documents

MLM email dated 31 October 2016



773819- 44 Downshire Hill

Seera Chara

to:

andrewmarlow@campbellreith.com

31/10/2016 19:07

Cc:

Stuart Willsher

Hide Details

From: Seera Chara <seera.chara@mlm.uk.com>

To: "andrewmarlow@campbellreith.com" <andrewmarlow@campbellreith.com>

Cc: Stuart Willsher <StuartWillsher@boyerplanning.co.uk>

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3 Attachments



53031-1 Underpin Sequencing - Option 5a.pdf 20161031_185518.pdf 20161031_185351.pdf

Dear Andrew,

Further to this afternoon's conversation, please find attached drawing No 53031-1, showing the underpinning sequence.

The depth of the underpin to be 1.08m was derived by subtracting the dimensions to the ground floor between the existing dimension of 2.310 between top of foundation and the ceiling (as shown on drawing 53025-1[copy attached]and proposed dimension of 2.390 between the existing ceiling and the new floor(as shown on drawing 53025-3[copy attached] and then adding 1.0m as shown drawing 53025-3.

We can confirm that based on the assessment presented in Section 4.5 of our report, the potential category of damage will be 0- Negligible.

Please let me know if you require any further information.

Kind regards,

Seera Chara

Technical Director

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