CampbellReith
consulting engineers

Basement Impact Assessment Audit

15 Lyndhurst Terrace, London, NW3 5QA

For
London Borough of Camden

Project No.
14006-12

Date
June 2023

Campbell Reith Hill LLP
15 Bermondsey Square
London
SE1 3UN

T: +44 (0)20 7340 1700
E: london@campbellreith.com
W: www.campbellreith.com

DOCUMENT HISTORY AND STATUS

Revision	Date	Purpose/ Status	File Ref	Author	Check	Review
D1	22/06/2023	For comment	RAkb-14006-12-230623-15 Lyndhurst Terrace-D1	RA	KB	KB

Document Details

Last Saved	22/06/2023 09:46
Author	R Ashmore MSci, Msc, FGS
Project Partner	E M Brown, BSc MSc CGeol FGS
Project Number	14006-12
Project Name	Basement Impact Assessment Audit
Revision	D1
Planning Reference	2023/1341/P
File Ref	RAkb-14006-12-230623-15 Lyndhurst Terrace-D1.docx

CONTENTS

1.0 NON-TECHNICAL SUMMARY 4
2.0 INTRODUCTION 5
3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST 7
4.0 DISCUSSION 11
5.0 CONCLUSIONS 13

APPENDICES

Appendix 1 Consultation Responses 14
Appendix 2 Audit Query Tracker 16
Appendix 3 Supplementary Supporting Documents 18

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 15 Lyndhurst Terrace, London, NW3 5PB (planning reference 2023/1341/P). The basement is considered to fall within Category B as defined by the Terms of Reference.

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. CampbellReith previously audited a basement scheme at the site (ref 13398-95, August 2021) in relation to planning application reference 2021/1304/P.

1.4 The existing site is occupied by a two-storey detached building. It is proposed to extend the existing dwelling house at the rear and construct a new basement under the majority of the existing building footprint of the house including a front and rear lightwell. The new basement walls shall comprise reinforced concrete retaining walls which will also underpin the existing house structure where they coincide.

1.5 The conclusions of the previous audit are considered to apply in regard to hydrogeology and hydrology; the proposed scheme will not impact upon the wider hydrogeological or hydrological environments.

1.6 The Appendices to the Construction Method Statement should be provided in full for review.

1.7 The proposed formation level and founding stratum are inconsistently referenced between documents and should be confirmed.

1.8 The full XDisp output and predictions of the magnitude of vertical and horizontal movements are requested.

1.9 The GMA indicates a predicted level of damage to the houses at No. 13 and No.17 Lyndhurst Terrace to be Very Slight (Category 1).

1.10 A separate garage structure at No. 17 is predicted to have damage of Slight (Category 2). LBC policies require damage to be limited to a maximum of Category 1 however, the previous application for this basement LBC have accepted Category 2 damage on the basis that the uninhabited structure is detached from the main house with no heritage merit.

1.11 Notwithstanding the above, the construction process should be controlled to minimise ground movements and mitigate damage to neighbouring structures to the lowest level practicable, in accordance with best practice.

1.12 Queries requiring additional clarification are summarised in Appendix 2. Until the additional information requested is presented, the BIA does not meet the requirements of CPG Basements.

2.0 INTRODUCTION

2.1 CampbellReith was instructed by London Borough of Camden (LBC) on 26th May 2023 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 15 Lyndhurst Terrace, London, NW3 5QA, reference 2023/1341/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.

2.3 A BIA is required for all planning applications with basements in Camden in general accordance with policies and technical procedures contained within

- Camden Local Plan 2017 - Policy A5 Basements.
- Camden Planning Guidance (CPG): Basements. January 2021.
- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.
- Hampstead Neighbourhood Plan

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;

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 "*Excavation of basement with front and rear lightwells; single storey front extension including repositioning of front door; alteration to existing front projection, including insertion of bi-fold doors within curved wall and decking above new lightwell; enlargement and painting black of stairwell enclosure; ground and first floor rear extension; alterations to fenestration.*"

2.6 The Audit Instruction confirmed 15 Lyndhurst Terrace neither is, nor is a neighbour to, listed buildings.

2.7 CampbellReith accessed LBC's Planning Portal on 26th May 2023 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA), by Site Analytical Services Ltd., 15/23908-2, issued April 2023. This included within the appendices:

- Factual Report on a Ground Investigation, by Site Analytical Services Ltd., 15/23908, issued November 2015.
- Ground Movement Assessment by Curtins Consulting Ltd., 083460-CUR-XX-XX-T-GE-00001, revision P01, issued 29th March 2023.

- Construction Management Plan, by Blue Sky Building, issued March 2023.
- Construction Method Statement, by Concept Consultancy, 3317, issued January 2023.
- Construction Method Drawings, by Concept Consultancy, 3319 drawing 01, revision A and drawing 50, revision A, issued January 2023.
- Design and Access Statement, by Beech Architects.
- Pre-planning application, by Camden Planning Solutions Team, 2022/3020/PRE, issued 20th January 2023.
- Drawings by Beech Architects, reference 643, issued in February 2022 including:
  - Location Plan, drawing 01.
  - Existing Site Plan, drawing 02.
  - Existing Plans, drawing 03, rev A.
  - Existing Elevations, drawings 04.
  - Existing Context Plan, drawing 05.
  - Proposed Elevations, drawing 07, rev K.
  - Proposed Site Plan, drawing 08, rev J.
  - Proposed Roof Block Plan, drawing 09, rev H.
  - Proposed Sections, drawing 10, rev F.
  - Proposed Plans, drawing 11, rev L.
  - Proposed Front Elevation Detail, drawing 20, rev F.
  - Proposed Rear Elevation Detail, drawing 21, rev D.
  - Changes over time, drawing 22.
  - Existing and Proposed Street scene, drawing 23.
- Drawings by Tom Simpson Design, issued in March 2023
  - Back Garden, drawing 3.01.
  - Front Garden, drawing 3.02.
  - Garden Sections 1, drawing 3.03.
- Pre-development Arboricultural Survey and Report, by Wassells, WAS163/2021 Rev B, issued 23rd March 2023
- Planning consultation comments.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Section 2.3 of the BIA.
Is data required by Cl.233 of the GSD presented?	No	Formation level to be confirmed.
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	
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	Section 3.8 of the BIA report.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 3.8 of the BIA report.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 3.8 of the BIA report.
Is a conceptual model presented?	Yes	Section 6.3 of the BIA report.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.0 of the BIA report.

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.0 of the BIA report.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.0 of the BIA report.
Is factual ground investigation data provided?	Yes	Section 5.0 of the BIA report
Is monitoring data presented?	Yes	Section 5.0 of the BIA report.
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	Yes	Section 3.2 of the BIA report.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Section 3.2 of the BIA report.
Is a geotechnical interpretation presented?	Yes	Section 6.0 of the BIA report and Section 3.0 of the Ground Movement Report (within Appendix C).
Does the geotechnical interpretation include information on retaining wall design?	Yes	
Are reports on other investigations required by screening and scoping presented?	Yes	Responses from Network Rail, TFL and Crossrail (Appendix A) Ground Investigation Factual Report (Appendix B) Ground Movement Assessment (Appendix C) Construction Method Statement
Are the baseline conditions described, based on the GSD?	Yes	

Item	Yes/No/NA	Comment
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	Section 7.0 of the BIA report.
Are estimates of ground movement and structural impact presented?	Yes	Included in Appendix C however, the maximum excavation depth should be checked and presented consistently.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Category 2 damage within the neighbouring detached garage previously accepted.
Has the need for monitoring during construction been considered?	Yes	
Have the residual (after mitigation) impacts been clearly identified?	Yes	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	Construction Method Statement and Section 7.0 of the BIA report.
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?	Yes	
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	No	Category 2 damage within the neighbouring detached garage is predicted but has been previously accepted.

Item	Yes/No/NA	Comment
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1 The Basement Impact Assessment (BIA) has been carried out by Site Analytical Services Ltd (SAS) and the individuals concerned in its production have suitable qualifications. Supporting documents have been provided by Concept Consultancy, a Construction Method Statement (CMS), and Curtins, a Ground Movement Assessment (GMA).

4.2 CampbellReith previously audited a basement scheme at the site (ref 13398-95, in August 2021) in relation to planning application reference 2021/1304/P. The proposed scheme is considered to broadly reflect the previously audited scheme.

4.3 The existing site is occupied by a two-storey detached building. It is proposed to extend the existing dwelling house at the rear and construct a new basement under the majority of the existing building footprint of the house including a front and rear lightwell. The new basement walls shall comprise reinforced concrete retaining walls which will also underpin the existing house structure where they coincide. The front light well shall also be formed with reinforced concrete walls.

4.4 The CMS proposes to construct the wall using a hit and miss method. Structural calculations are indicated to be included within the CMS but were not included within the version submitted for audit. The Appendices to the Construction Method Statement should be provided in full for review.

4.5 The ground investigation has identified that the site is generally underlain by between 0.40m and 1.20m of Made Ground over the Claygate Member comprising soft becoming firm and then stiff silty sandy clay with lenses of clayey silty fine sand to 9.40m bgl. These soils are underlain by stiff silty sandy clay with gypsum crystals of the London Clay.

4.6 Groundwater was not encountered in monitoring wells installed to depths of 6.00m bgl. Very slight seepage was recorded in a deeper borehole at 15.00m bgl.

4.7 The basement formation level is referenced as various depths (2.9m, 2.5m, and 3.2m) below ground level within the BIA, GMA and CMS reports. In addition, the founding stratum is inconsistently referenced between documents. The proposed formation level and founding stratum should be confirmed and consistent throughout the reports.

4.8 The conclusions of the previous audit are considered to apply in regard to hydrogeology and hydrology; the proposed scheme will not impact upon the wider hydrogeological or hydrological environments.

4.9 During review it was noted that the loads applied within the PDisp model appear to have been input as line loads (in kN/m) and have not been converted to bearing pressure (in kN/m^2).

4.10 The full XDisp output should be provided, as well as estimates of the vertical and horizontal movement due to basement construction.

4.11 The GMA indicates a predicted level of damage to the houses at No. 13 and No. 17 Lyndhurst Terrace to be Very Slight (Category 1). This should be updated to reflect the maximum excavation depth if needed.

4.12 A separate garage structure at No. 17 is predicted to have damage of Slight (Category 2). Whilst this an uninhabited structure, LBC policies require damage to be limited to a maximum of Category 1. However, LBC have accepted Category 2 damage in the previous application for this basement on the basis that the uninhabited structure is detached from the main house with no heritage merit.

4.13 Notwithstanding the above, the construction process should be controlled to minimise ground movements and mitigate damage to neighbouring structures to the lowest level practicable, in accordance with best practice.

5.0 CONCLUSIONS

5.1 CampbellReith previously audited a basement scheme at the site (ref 13398-95, August 2021) under the planning application reference 2021/1304/P.

5.2 The existing site is occupied by a two-storey detached building. It is proposed to extend the existing dwelling house at the rear and construct a new basement under the majority of the existing building footprint of the house including a front and rear lightwell. The new basement walls shall comprise reinforced concrete retaining walls which will also underpin the existing house structure where they coincide. The front lightwell shall also be formed with reinforced concrete walls.

5.3 The conclusions of the previous audit are considered to apply in regard to hydrogeology and hydrology; the proposed scheme will not impact upon the wider hydrogeological or hydrological environments.

5.4 The Appendices to the Construction Method Statement should be provided in full for review.

5.5 The proposed formation level and founding stratum are inconsistently referenced between documents and should be confirmed.

5.6 The full XDisp output and predictions of the magnitude of vertical and horizontal movements are requested.

5.7 The GMA indicates a predicted level of damage to the houses at No. 13 and No.17 Lyndhurst Terrace to be Very Slight (Category 1).

5.8 A separate garage structure at No. 17 is predicted to have damage of Slight (Category 2). LBC policies require damage to be limited to a maximum of Category 1 however, the previous application for this basement LBC have accepted Category 2 damage on the basis that the uninhabited structure is detached from the main house with no heritage merit.

5.9 Notwithstanding the above, the construction process should be controlled to minimise ground movements and mitigate damage to neighbouring structures to the lowest level practicable, in accordance with best practice.

5.10 Queries requiring additional clarification are summarised in Appendix 2. Until the additional information requested is presented, the BIA does not meet the requirements of CPG Basements.

CampbellReith
consulting engineers

Appendix 1

Consultation Responses

CampbellReith
consulting engineers

Residents' Consultation Comments

Surname	Address/ Organisation	Date	Issue raised	Response
Parish	17 / 19 Lyndhurst Terrace	Not provided	The basement excavation is likely to cause water ingress problems for its immediate neighbours because of the springs in the immediate vicinity.	Hydrogeology and hydrology impacts closed by previous BIA and Audit.
Mayo	Redington Frognal Association	09/05/23	Risks diverting a spring and underground river. Will create a loss of natural soft surface, contributing to surface water flooding in an area.	Hydrogeology and hydrology impacts closed by previous BIA and Audit.
Iammanuel	13 Lyndhurst Terrace	04/05/23	The displacement caused by the proposed basement construction will make neighbouring buildings vulnerable to water damage.	Hydrogeology and hydrology impacts closed by previous BIA and Audit.

CampbellReith
consulting engineers

Appendix 2

Audit Query Tracker

CampbellReith
consulting engineers

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Land Stability	The Appendices to the Construction Method Statement should be provided in full for review.	Open	
2	Land Stability	The proposed formation level and founding stratum are inconsistently referenced between documents and should be confirmed.	Open	
3	Ground Movement Assessment	The full XDisp output should be provided to include estimates of the vertical and horizontal movement due to basement construction.	Open	

CampbellReith
consulting engineers

Appendix 3

Supplementary Supporting Documents

None

London

15 Bermondsey Square
London
SE1 3UN

T: +44 (0)20 7340 1700
E: london@campbellreith.com

Birmingham

Chantry House
High Street, Coleshill
Birmingham B46 3BP

T: +44 (0)1675 467 484
E: birmingham@campbellreith.com

Bristol

Unit 5.03,
HERE,
470 Bath Road,
Bristol BS4 3AP

T: +44 (0)117 916 1066
E: bristol@campbellreith.com

Manchester

No. 1 Marsden Street
Manchester
M2 1HW

T: +44 (0)161 819 3060
E: manchester@campbellreith.com