CampbellReith
consulting engineers

71 Avenue Road, London, NW8 6HP

Basement Impact Assessment Audit

For
London Borough of Camden

Project No.
13693-86

Date
August 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	12/12/2022	Comment	AAkb-13693-86-121222-71 Avenue Road D1.doc	AA	NS	KB
D2	02/08/2023	Comment	NSemb-13693-86-020823-71 Avenue Road D2	NS	EMB	EMB

This document has been prepared in accordance with the scope of Campbell Reith Hill LLP's (CampbellReith) appointment with its client and is subject to the terms of the appointment. It is addressed to and for the sole use and reliance of CampbellReith's client. CampbellReith accepts no liability for any use of this document other than by its client and only for the purposes, stated in the document, for which it was prepared and provided. No person other than the client may copy (in whole or in part) use or rely on the contents of this document, without the prior written permission of Campbell Reith Hill LLP. Any advice, opinions, or recommendations within this document should be read and relied upon only in the context of the document as a whole. The contents of this document are not to be construed as providing legal, business or tax advice or opinion.

© Campbell Reith Hill LLP 2023

Document Details

Last Saved	02/08/2023 10:33
Author	A. Ashraff, B.Eng. GMICE
Project Partner	E M Brown, BSc MSc CGeol FGS
Project Number	13693-86
Project Name	71 Avenue Road, London, NW8 6HP
Revision	D2
File Ref	NSemb-13693-86-020823-71 Avenue Road D2

CONTENTS

APPENDICES

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 71 Avenue Road, London, NW8 6HP (planning reference 2022/2529/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.

1.4 The Basement Impact Assessment (BIA) has been carried out by Ground and Water and the individuals concerned in its production have qualifications in accordance with CPG Basements.

1.5 The proposal involves the complete demolition of the existing property to enable the construction of new dwelling with three storeys and a basement covering the entire building footprint.

1.6 Clarification on the proposed basement excavation depth is required. It should also be confirmed whether the property is detached or semi-detached and the BIA updated as necessary. Architectural drawings should be amended to show basement depth in all the sections presented and documents to be updated to be consistent.

1.7 Screening exercises for Land Stability, Hydrogeology and Hydrology include relevant figures/maps from the ARUP GSD and other guidance documents to support responses to screening questions. However, the hydrogeology impact assessment should be completed.

1.8 A ground investigation has been undertaken to confirm ground conditions, groundwater levels, existing foundations, and allow the derivation of geotechnical parameters for retaining wall design and for use in subsequent impact assessment.

1.9 A Flood Risk Assessment is submitted along with SuDS proposal to mitigate the increase in runoff by the provision of rainwater harvesting system and attenuation tank.

1.10 A Structural Report has been provided. Clarification on the estimated depth of the piled retaining wall is required.

1.11 A Ground Movement Assessment has been presented and should be amended as discussed in Section 4.

1.12 The section on structural monitoring presented in the BIA indicates the presence of walls within Category 2 of the Burland Scale. This cannot be accepted ad require further clarification.

1.13 It cannot be confirmed that the BIA complies with the requirements of CPG: Basements until the queries raised in Section 4 and Appendix 2 are addressed.

2.0 INTRODUCTION

2.1 CampbellReith was instructed by London Borough of Camden (LBC) on 09/11/2022 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 71 Avenue Road, London, NW8 6HP and Planning Reference No - 2022/2529/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.
- Neighbourhood Plan if relevant – Not Applicable

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 *"Erection of a two storey, single family dwellinghouse (Class C3) with basement and accommodation in the roof space, following the demolition of existing"*.

2.6 The Audit Instruction confirmed 71 Avenue Road does not involve, nor is a neighbour to, listed buildings.

2.7 CampbellReith accessed LBC's Planning Portal on 22/11/22 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA) by Adkins Consultants Ltd dated 14th April 2022, Rev A
- Arboricultural Impact Assessment & Method Statement dated 1st June 2022, Ref-jwmb/rpt1/71avenuerd/AIAAMS
- Planning Application Drawings by Patrick Urbanski Architect dated 19th July 2019, Ref – P_19_245 consisting of:

  Location Plan, Rev A;

  Existing Plans, Rev I;

  Proposed Plans, Rev J.
- Demolition Plan by Adkins Consultants Ltd. Dated 10th May 2022 Rev 00, Dwg No. - AR-MP-A1-C-01
- Site Visit Report by Adkins Consultants Ltd dated 4th January 2022, Rev A
- Flood Risk Assessment by GeoSmart Information, dated 29th March 2022, Ref No. - 75438R1
- Sustainable Drainage Assessment by GeoSmart Information, dated 14th April 2022, Ref No. - 75438R1
- Design & Access Statement by Patrick Urbanski Architect dated 18th April 2022, Rev A, Ref – P_19_245

2.8 CampbellReith issued the initial audit in December 2022, following which, the following additional information was received in July 2023:

- Basement Impact Assessment and Ground Investigation Report (BIA) by Ground and Water dated May 2023, ref.: GWPR5173/BIA&GIR/May2023
- Structural Report by Adkins Consultant Ltd dated 12th January 2023, Rev A
- Arboricultural Impact Assessment & Method Statement by Arbortrack Systems Ltd dated June 2023.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECKLIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	
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?	No	BIA states that property is detached. Plans suggest it is semi-detached.
Are suitable plan/maps included?	No	Clarification on the excavation depth is required. Architectural drawings, BIA and structural engineering report to be amended to provide necessary information and be consistent.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	No	As above.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Is a conceptual model presented?	Yes	

Item	Yes/No/NA	Comment
Land Stability Scoping provided? Is scoping consistent with screening outcome?	No	No consideration of River Tyburn
Hydrogeology Scoping provided? Is scoping consistent with screening outcome?	No	No consideration of River Tyburn
Hydrology Scoping provided? Is scoping consistent with screening outcome?	Yes	
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	Yes	
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	Yes	In Site Inspection Report
Is the presence/absence of adjacent or nearby basements confirmed?	No	However, assumptions on this regard are considered conservative.
Is a geotechnical interpretation presented?	Yes	
Does the geotechnical interpretation include information on retaining wall design?	Yes	However clarification on the bearing capacity adopted in the design is required.
Are reports on other investigations required by screening and scoping presented?	Yes	A flood risk assessment, SuDS system and Demolition Method Statement is provided. Ground investigation report, ground movement assessment and Structural Report are provided.
Are the baseline conditions described, based on the GSD?	No	Approximate location of lost River Tyburn requires clarification.

Item	Yes/No/NA	Comment
Do the base line conditions consider adjacent or nearby basements?	No	
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	Yes	
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	Hydrogeology impact assessment to be completed. Relationship between 69 and 71 Avenue Road to be confirmed.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	Requirement for mitigation of groundwater and stability impacts to be confirmed on completion of scoping. FRA and SuDS proposed to mitigate surface water flood risk. Mitigation during construction presented in the BIA and Structural Report.
Has the need for monitoring during construction been considered?	Yes	
Have the residual (after mitigation) impacts been clearly identified?	No	Hydrogeological impacts to be confirmed and GMA to be revised.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	As above.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	Hydrogeological impacts to be confirmed. SuDs proposed to mitigate effects of increased surface water flows.

Item	Yes/No/NA	Comment
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	As above.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	No	GMA states Cat.2 expected. Clarification required and GMA to be revised.
Are non-technical summaries provided?	No	

4.0 DISCUSSION

4.1 The Basement Impact Assessment (BIA) was originally carried out by Adkins Consultants Ltd with input from GeoSmart Information Ltd. A new BIA has been recently presented and is authored by Ground and Water. The individuals listed as being concerned in its production hold appropriate qualifications in accordance with CPG Basements, however, their signatures are required to confirm their involvement.

4.2 The LBC Instruction to proceed with the audit identified that the basement proposal does not involve, nor is a neighbour to, listed buildings. The existing property is a two-storey house, with gardens present to the south-west and north-east. The house is described in the BIA as being detached; however it seems to share a party wall with No. 69 Avenue Road. Clarification is required. The site is bounded by Queen's Grove and Avenue Road to the north-west and north-east respectively, to the south-east No. 69 Avenue Road is present, while No. 37a Queen's Grove is located to the south-west.

4.3 The proposal involves the complete demolition of the existing property to enable the construction of new dwelling with three storeys and a basement covering the entire building footprint. The original depth of the basement was indicated to be 3.60m below ground level (bgl); however the newly submitted BIA indicates the basement level will be at 6.20m bgl and the full depth of the basement cannot be ascertained from architectural drawings. The structural report indicates the basement will be c. 4.20m bgl and that there will be a localised deeper basement area where a pool is proposed. Clarification is required and the basement depth and extent should be clearly indicated on the drawings (which should be scaled) and adopted consistently in the BIA and structural report.

4.4 Desk Study information has been presented clearly with relevant figures/maps from the ARUP GSD and other guidance documents to support responses to screening questions.

4.5 The screening exercise has identified the presence of the lost River Tyburn to flow within proximity of the site but gives no indication of location and is not carried through to scoping. The river should be clearly located in respect to the proposed development, and any impact assessed, if needed.

4.6 The Land Stability screening has been revised, and 'Yes' answers brought forward into scoping to consider potential impacts and further assessments needed to mitigate these impacts. An Arboricultural Survey is presented which confirms no trees are going to be removed as part of the development.

4.7 The Impact Assessment has been revised and the following information has been presented to inform the assessment:

- Ground Investigation Report,
- Ground Movement Assessment,
- Outline Structural Method Statement.

4.8 A ground investigation was carried by Ground and Water in January 2023 comprising four boreholes to a maximum depth of 9.00m bgl. The ground conditions encountered comprise Made Ground to a maximum depth of 1.80m bgl and London Clay Formation to depth. It is accepted the basement will be founded within the London Clay. No groundwater was encountered during drilling, but it was monitored between 1.60 and 4.40m bgl during two following visits.

4.9 The site investigation findings confirm that the site is not underlain by an aquifer. However, the possible presence of the lost Rive Tyburn should be considered further to confirm the presence or absence of any adverse impact on the hydrogeological environment.

4.10 The new BIA incorrectly states that the property is at low risk from surface water flooding in the screening. The original BIA identified a high risk of surface water flooding at the site. There will be an increase in hardstanding areas as part of the proposals. The impacts due to surface water flooding and increase in impermeable surface area will be mitigated through the provision of a SuDS system comprising rainwater harvesting along with an attenuation tank with control flow valves. The assessment made in GeoSmart Information report considers a 1 in 100 year flood event and accounts for 40% climate change.

4.11 A Structural Report is presented which indicates the basement excavation will be facilitated by the installation of a contiguous piled retaining wall. The reinforced concrete basement slab will act as a raft foundation and, together with the piled retaining wall, will take the loads of the proposed structure. The report mentions the need of bracing/props to support the retaining wall during the excavation, however states that temporary design will be responsibility of the temporary works contractor. The length of the embedded retaining wall is not indicated. Waterproofing and groundwater ingress mitigation measures are presented.

4.12 Geotechnical parameters to be adopted in the design, including retaining wall design have been presented and generally accepted.

4.13 A Ground Movement Assessment (GMA) is presented in the BIA to demonstrate damage to neighbouring properties and infrastructure is limited to Category 1 of the Burland Scale. The approach reported in CIRIA C760 has been adopted and the software XDisp used to undertake the analysis.

4.14 The GMA describes the basement construction as comprising underpinning and secant piled embedded retaining walls which does not accord with the Structural Calculations report. Clarification on the following items is also required:

- Embedded piled retaining wall depth is assumed to be 10m bgl. As the basement excavation will be c. 6.20m bgl (to be confirmed) and the embedded retaining wall is taking structural loads in the long term, outline calculations are required to support assumptions regarding the pile length.
- The GMA states that any party wall (to No. 69 Avenue Road?) has not been included in the analysis. At this stage all the walls within the zone of influence of the basement should be analysed and an expected category of damage should be provided. A plan showing the geometry of neighbouring walls in relation to the basement is required.

- Full tabular input and output of the XDisp software is required.

4.15 The section on structural monitoring presented in the BIA (7.5) indicates that some neighbouring structures may experience damage within Category 2 of the Burland Scale. This cannot be accepted and requires further clarification.

5.0 CONCLUSIONS

5.1 The Basement Impact Assessment (BIA) has been carried out by Ground and Water and the individuals concerned in its production have qualifications in accordance with CPG Basements.

5.2 Clarification on the proposed basement excavation depth is required. It should also be confirmed whether the property is detached or semi-detached and the BIA updated as necessary. Architectural drawings should be amended to show basement depth in all the sections presented and documents to be updated to be consistent.

5.3 Screening exercises for Land Stability, Hydrogeology and Hydrology include relevant figures/maps from the ARUP GSD and other guidance documents to support responses to screening questions. However, the hydrogeology impact assessment should be completed.

5.4 A ground investigation has been undertaken to confirm ground conditions, groundwater levels, existing foundations, and allow the derivation of geotechnical parameters for retaining wall design and for use in subsequent impact assessment. It is accepted the basement will be founded within the London Clay.

5.5 A Flood Risk Assessment is submitted along with SuDS proposal to mitigate the increase in runoff by the provision of rainwater harvesting system and attenuation tank.

5.6 A Structural Report has been provided. Clarification on the estimated depth of the piled retaining wall is required.

5.7 A Ground Movement Assessment has been presented and should be amended as discussed in Section 4.

5.8 The section on structural monitoring presented in the BIA indicates the presence of walls within Category 2 of the Burland Scale. This cannot be accepted ad require further clarification.

5.9 It cannot be confirmed that the BIA complies with the requirements of CPG: Basements until the queries raised in Section 4 and Appendix 2 are addressed.

CampbellReith
consulting engineers

Appendix 1

Consultation Responses

None

CampbellReith
consulting engineers

Appendix 2

Audit Query Tracker

CampbellReith
consulting engineers

Query No	Subject	Query	Status	Date closed out
1	BIA	Contribution to BIA by all listed parties to be confirmed.	Open – Section 4.1	
2	BIA	Clarification on whether the applicant's property shares a party wall with 69 Avenue Road is required.	Open - Section 4.2.	
3	BIA format	Clarification on the excavation depth is required. Architectural drawings, BIA and Structural Report should be in agreement.	Open – Section 4.3.	
4	Hydrogeology	Hydrogeological impact assessment to be completed to include the presence of a 'lost river' potentially running close to the proposed development.	Open – Section 4.5.	
5	Land stability	Clarification on the assumed depth of the embedded piled retaining wall is required.	Open – Section 4.11. & 4.14.	
6	Land stability	The GMA should be revised as discussed in Section 4 and the input/output of the software is required. The GMA should demonstrate that damages quantified to be no more than Category 1 of the Burland Scale.	Open – Section 4.14 – 4.15.	

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

Campbell Reith Hill LLP. Registered in England & Wales. Limited Liability Partnership No OC300082
A list of Members is available at our Registered Office at: 15 Bermondsey Square, London, SE1 3UN
VAT No 974 8892 43