CampbellReith
consulting engineers

70-86 Royal College Street, NW1 0TH

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 13398-10
Revision: F1

July 2020

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	09 April 2020	Comment	RNemb 13398-10 090420 70-86 Royal College Street-D1.doc	RN	EMB	EMB
F1	03 July 2020	For Planning	RNemb13398-10 030720 70-86Royal College Street-F1.doc	RN	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 2015

Document Details

Last saved	03/07/2020 14:49
Path	RNemb13398-10 030720 70-86 Royal College Street-F1.doc
Author	R Nair, BTech MSC DIC GMICE
Project Partner	E M Brown, BSc MSc CGeol FGS
Project Number	13398-10
Project Name	70-86 Royal College Street, NW1 0TH
Planning Reference	2020/0728/P

Contents

Appendix

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 70-86 Royal College Street, NW1 0TH (planning reference 2020/0728/P). The basement is considered to fall within Category C 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 BIA has been prepared by RSK Environmental Limited, and the Structural Methodology Statement (SMS) has been prepared by Heyne Tillett Steel, using individuals who possess suitable qualifications. The qualification of the reviewer for the Flood Risk Assessment was provided on request, and is satisfactory.

1.5. The BIA has confirmed that the proposed basement will be founded on London Clay. London Clay, or materials derived from it, are present below a variable and locally thin mantle of Made Ground. Perched water is present in Made Ground.

1.6. The responses to screening questions in the BIA for impacts to hydrogeology and land stability and regarding the presence of River Fleet have now been updated. It is accepted there is no impact on the local and wider hydrogeology of the area. It is also accepted there are no hydrological impacts.

1.7. Information regarding the adjacent basements has been included in the revised BIA.

1.8. The BIA has confirmed that the internal basement raft slab is ground bearing and the perimeter will be formed by a secant piled wall. The construction method has been updated in the GMA to be consistent with the SMS, as requested in the previous audit report. The ground movement assessment has also been updated based on audit comments, to consider the loading on the perimeter secant piled wall. Similarly, soil stiffness parameters have now been included in the BIA for retaining wall design. The GMA confirms damage to neighbouring buildings can be limited to Burland Category 1.

1.9. Movement monitoring on neighbouring buildings is recommended. It is stated in the BIA that the movement monitoring strategy during excavation and construction will need to be agreed as a part of the party wall process.

1.10. Responses to audit queries and requests for further information were found to be satisfactory. It is confirmed the BIA meets the requirements of CPG: Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 11 March 2020 to carry out a Category C Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 70-86 Royal College Street, NW1 0TH (Planning application reference: 2020/0728/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: Basements. March 2018

Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.

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 "Demolition of existing buildings (Class B2); Erection of 5 storey building (plus rooftop pavilions/plant and basement) to provide a healthcare facility (mixed use Class D1/C2)".

2.6. CampbellReith accessed LBC's Planning Portal in April 2020, and gained access to the following relevant documents for audit purposes:

- Design and Access Statement dated February 2020, prepared by Ian Chalk Architects;

- Structural Methodology Statement dated January 2020, prepared by Heyne Tillett Steel. This document includes the following relevant information:
    - Structural Drawings
    - Historic Maps
    - Thames Water Asset Search, dated March 2019;
    - Ground Investigation Report dated January 2020, prepared by RSK Environmental Ltd;
    - Basement Impact Assessment dated January 2020, prepared by RSK Environmental Ltd;
    - Flood Risk Assessment and SuDs Strategy Report dated January 2020, prepared by Heyne Tillett Steel.
- Arboricultural Report dated January 2020, prepared by Challice Consulting Ltd.
- Planning Application Drawings consisting of:
    - Existing Drawings (Drawing no. 1485_00(00)001,002,100-102, 130, 160-162,165);
    - Proposed Drawings (Drawing no. 1485_00(00)011,012,198-206, 230-232, 260-265, 270-277, 300, 301).

2.7. CampbellReith accessed LBC's Planning Portal in July 2020, and gained access to the following relevant documents and additional information for audit purposes:

- Basement Impact Assessment dated April 2020, prepared by RSK Environmental Ltd;

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	The qualifications of the reviewers involved in the production of the Flood Risk Assessment were provided on request and found to be satisfactory.
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	However, though not within the site boundary, it is noted that the exact location of the 'lost' river Fleet has not been determined.
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	Responses to Questions 5, 6, 8 and 13 were revised, and found to be satisfactory.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	The response to Question 2 had been updated to recognise the presence of former River Fleet. It is noted Section 2 of the SMS states that the historic river is culverted and there will be no impact.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Is a conceptual model presented?	Yes	Refer Section 11.3 of the GIR and Section 2.3 of the SMS.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	NA	
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	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	It is confirmed in Section 5.3.6, based on evidence, that the Grand Lion Pub has 3m basement.
Is a geotechnical interpretation presented?	Yes	
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 7.3.1.1 of the BIA.
Are reports on other investigations required by screening and scoping presented?	Yes	Draft Construction Management Plan, Arboricultural Report, Ground Movement/Building Damage Assessment, Flood Risk Assessment, and SuDs strategy report included.
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	

Item	Yes/No/NA	Comment
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 screen and scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Movement monitoring with targets and trigger levels for the adjacent structures is recommended in the BIA. It is accepted that this be finalised as a part of party wall agreement.
Has the need for monitoring during construction been considered?	Yes	However, the detail will need to be agreed as part of party wall agreements.
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	However, it should be confirmed that Thames Water are satisfied with the predicted impact due to ground movements on the culvert beneath Royal College Street.
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?	Yes	Damage category limited to Category 1 on Burland Scale.

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) and Ground Investigation Report (GIR) have been carried out by RSK Environmental Limited and are contained within the Structural Methodology Statement (SMS) prepared by Heyne Tillett Steel. The individuals concerned in its production have suitable qualifications as required by the CPG.

4.2. It is proposed to demolish an existing garage on site, and construct a five-storey superstructure with a lower ground floor, and a basement over an approximate area of 60m by 18m. It is stated that c.8m of excavation will be required across the site to facilitate the proposed basement construction.

4.3. It is stated that the proposed basement will be founded on London Clay. A ground investigation has identified that the site is underlain by Made Ground up to a maximum depth of 3.40m bgl, followed by London Clay. Elsewhere reworked London Clay is recorded over in situ London Clay. Perched water was recorded in Made Ground during monitoring at a minimum depth of 2.69m bgl.

4.4. The BIA and SMS have been made consistent following the initial audit (dated April 2020) and it is understood that the basement construction is proposed as a load bearing propped secant piled wall along the perimeter, with a basement raft slab, supporting the internal columns. The GIR advises that a compressible medium is placed beneath the basement slab to accommodate heave, but this is superseded by the revised BIA.

4.5. The screening for impacts to subterranean flows has been revised and acknowledges the presence of River Fleet within 100m of the site. It is accepted that the lost river does not impact the site.

4.6. It is noted that perched water is present on site. Since it is confirmed that a secant piled retaining wall is proposed for the construction, it is accepted that large scale dewatering would not be required.

4.7. The site is located in Flood Zone 1. The proposed development will not lead to change in the hard-standing area on site. A Flood Risk Assessment and SuDs strategy report has been provided. It is noted that a blue roof is proposed in order to restrict flows to the sewer. The information has been reviewed by individuals with suitable qualification as set by CPG. It is accepted that there are no adverse impacts to surface water flows.

4.8. It is accepted that the site is within a generally flat setting and it is stated that re-profiling and landscaping is not proposed.

4.9. Correct responses have now been provided in the land stability screening in relation to the felling of trees and the proximity of a former river. The screening notes that the London Clay is not the shallowest stratum and considers the fact that the overlying stratum (reworked London

Clay) is derived from it. The assessment states that there will be no adverse impacts on stability from the removal of the trees. The screening exercise notes the presence of worked ground and the adjacent highway and both are addressed in the subsequent assessment.

4.10. Response to Question 13 of the screening has been revised and states that there will be an increase in differential depth between foundations as a result of the basement proposals. It is now confirmed, based on evidence, that the Grand Lion pub has a 3m deep basement.

4.11. A Ground Movement Assessment has been revised to consider a secant pile retaining wall with high stiffness achieved by propping arrangement. The ground movement assessment has also considered structural impacts to surrounding buildings. It is stated that the impact shall be within Category 1 on the Burland Scale. The GMA also considers the impact to Royal College Street (Highway Assessment) and to the Thames Water brick trunk sewer running beneath the Royal College Street. It should be confirmed that Thames Water are satisfied that the impact of the predicted movement is acceptable.

4.12. The ground movement assessment includes assessment of ground movements (settlements) produced due to loading on the piled perimeter wall.

4.13. The GIR provides a geotechnical interpretation and soil parameters that may be used in the design of the basement retaining walls. Stiffness parameters (E) to allow the design of the retaining walls has been included in Section 7.3.1.1 of the BIA.

4.14. The BIA recommends that a movement monitoring strategy is employed during excavation and construction. It is recommended that trigger levels be finalised during party wall agreements.

5.0 CONCLUSIONS

5.1. The BIA and SMS has been carried out by individuals of suitable qualification.

5.2. The BIA has confirmed that the proposed basement will be founded on London Clay. London Clay, or materials derived from it, are present below a variable and locally thin mantle of Made Ground.

5.3. Perched water is present in Made Ground. It is confirmed that secant pile retaining wall is proposed. The reports have been made consistent to reflect the same form of construction with respect to the retaining walls and basement slab.

5.4. The responses to screening questions in the BIA for impacts to hydrogeology and stability, and subsequent scoping, have been updated with regard to the historic River Fleet. The land stability screening and scoping has been updated to reflect the proposed felling of trees, the presence of London Clay and the differential depth that will be created between adjacent foundations by the basement proposals.

5.5. Further information regarding the adjacent basements, are included in the revised BIA.

5.6. The ground movement assessment has been updated to include ground movements produced as a result of loading on the perimeter piled wall. Soil stiffness parameters has been included in the BIA for retaining wall design. It is confirmed that damage to neighbouring properties can be limited to Burland Category 1.

5.7. Movement monitoring during excavation and construction is recommended in the BIA. This should be agreed and finalised during party wall agreements.

5.8. It is accepted that the development will not impact on the local and wider hydrogeology of the area. It is accepted the site is not in an area subject to flooding and there are no hydrological impacts.

5.9. Based on response and revised information provide, the BIA meets the requirements of CPG: Basements.

Appendix 1: Residents' Consultation Comments

No relevant comments

Appendix 2: Audit Query Tracker

CampbellReith
consulting engineers

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	Confirmation required on the type of perimeter wall adopted for the proposal (secant/contiguous) and basement slab. Soil stiffness parameter to be included.	Closed	09.06.2020
2	Hydrogeology	Response to Subterranean groundwater screening question 2 to be updated to consider 'lost' River Fleet. The same applies to Question 8 of Land Stability screening.	Closed	09.06.2020
3	Hydrology	Qualification of the authors/reviewers of the FRA is requested.	Closed	03.07.2020
4	Land stability	Screening exercise to be updated to reflect tree removal, presence of London Clay and differential foundation depths.	Closed	09.06.2020
5	Land Stability	GMA to be updated to included settlements produced due to load induced on the perimeter wall. Revision may be required to consider secant piled wall.	Closed	09.06.2020
6	Land Stability	GMA and BIA to be updated to include evidence on the depth and extent of adjacent basement(s).	Closed	09.06.2020
7	Land Stability	Movement monitoring strategy with trigger levels are requested based on updated GMA.	Closed	03.07.2020

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

Surrey

Raven House
29 Linkfield Lane, Redhill
Surrey RH1 1SS

T: +44 (0)1737 784 500
E: surrey@campbellreith.com

Manchester

No. 1 Marsden Street
Manchester
M2 1HW

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

Bristol

Wessex House
Pixash Lane, Keynsham
Bristol BS31 1TP

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