CampbellReith
consulting engineers

5 Branch Hill, NW3 7LT

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12727-69
Revision: F1

October 2018

Campbell Reith Hill LLP
Friars Bridge Court
41-45 Blackfriars Road
London
SE1 8NZ

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	August 2018	Comment	RNgk12727-69-230818-5Branchhill-D1.doc	RN	GK	GK
F1	October 2018	Planning	RNgk12727-69-101018-5 Branchhill-F1.doc	RN	GK	GK

Document Details

Last saved	10/10/2018 09:25
Path	RNgk12727-69-101018-5 Branch hill-F1.doc
Author	R Nair
Project Partner	E M Brown, BSc MSc CGeol FGS
Project Number	12727-69
Project Name	5 Branch Hill, NW3 7LT
Planning Reference	2017/6899/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 5 Branch Hill (planning reference 2017/6899/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) was carried out by LBH Wembley Engineering. The authors' qualifications are in accordance with LBC guidelines.

1.5. The BIA has confirmed that the proposed basement extension will be over a very small area (in the order of 1m x <2m) and will require an excavation of around 4m from existing ground level. It will be founded within the Bagshot Formation at the same level as the existing basement. The Bagshot Formation overlies the Claygate Member.

1.6. Although the Bagshot Formation is designated as a secondary Aquifer it is unlikely that the groundwater table will be encountered during the proposed excavation and construction works.

1.7. The BIA states underpinning to be the method for basement construction. Temporary works information is provided. Damage impact to neighbouring structures is assessed to be Category 0 (Negligible) in accordance with the Burland Scale.

1.8. A combined sewer runs beneath the existing basement. The proposed development will allow appropriate future access to the sewer.

1.9. It is accepted that the development will not impact on the wider hydrogeological or hydrological environments, will not impact upon slope stability and is not in an area subject to flooding.

1.10. In response to Consultation Responses, the Engineer has confirmed that stability of the carriageway and the adjoining structures will be maintained.

1.11. The BIA meets the criteria of CPG Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on the 13th of March 2018 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 5 Branch Hill, NW3 7LT.

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

- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.
- Camden Planning Guidance Basements. March 2018.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.
- Local Plan Policy A5 Basements.

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;

d) 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 rear basement and ground floor level 2 storey extension".*

2.6. CampbellReith accessed LBC's Planning Portal on 13 August 2018 and gained access to the following relevant documents for audit purposes:

- Application for Planning Permission, dated December 2017;

- Drawings: Proposed 3D Images (P04), Proposed plans (P01), Existing Plans (E01), Existing Sectional Elevations (E02), Proposed Sectional Elevations (P02), Proposed Roof Plan (P03), dated December 2017;
- Basement Impact Assessment, dated July 2018;
- Screening and Scoping Assessment, dated March 2018;
- Consultation responses and objections.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

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?	Yes	
Are suitable plan/maps included?	No	However, suitable maps have been referenced during the preparation of the BIA.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	No	It's accepted that appropriate mapping has been referenced in preparation of the BIA.
Land Stability Screening: Have appropriate data sources been consulted?	Yes	
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Hydrology Screening: Have appropriate data sources been consulted?	Yes	
Is a conceptual model presented?	Yes	Discussed within BIA text.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Is factual ground investigation data provided?	No	However, appropriate ground investigation data for nearby areas were consulted, considering the scale and nature of the proposals.
Is monitoring data presented?	No	Considering the proposed scale of construction and the existing full depth basement / lightwell adjacent, this is accepted.
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	Yes	
Is the presence of adjacent or nearby basements confirmed?	Yes	The current extension is being made to an existing basement. Section 8.3.1 of the BIA states that the adjacent No.4 Branch Hill is set at basement level.
Is a geotechnical interpretation presented?	Yes	Appropriate bearing capacity assessed.
Does the geotechnical interpretation include information on retaining wall design?	Yes	
Are reports on other investigations required by screening and scoping presented?	NA	
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	
Has the need for monitoring during construction been considered?	Yes	
Have the residual (after mitigation) impacts been clearly identified?	NA	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	The site area is 100% hard surfaced now and will remain the same after development.
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	
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) along with the Screening and Scoping document, has been prepared and carried out by a well-known firm of engineering consultants, LBH Wembley Engineering and the authors' qualifications are in accordance with LBC guidance.

4.2. The basement proposal does not involve a listed building nor is it adjacent to listed buildings.

4.3. The BIA has confirmed that the proposed basement extension will be over a very small area (in the order of 1m x <2m) and will require an excavation of around 4m from existing ground level.

4.4. Based on nearby site investigation data, the BIA has identified that the basement shall be founded on the Bagshot Formation, underlain by the Claygate Member at around 15m below ground level (+110m OD). Groundwater is believed to be well below the proposed basement level and it is unlikely that the groundwater table will be encountered during the proposed excavation and construction works.

4.5. Section 7 of the BIA outlines the proposed construction methodology, using underpinning. It is stated that the existing walls of the lightwell and the ground floor would act as high and low level props to laterally support the walls in the permanent case. Reinforced Concrete Retaining Walls Calculations have been included in the BIA. The design calculations take into account the traffic surcharge load from the Branch Hill Mews access. The existing perimeter walls and proposed retaining walls would be temporarily laterally propped during construction.

4.6. Damage impact to neighbouring structures is assessed to be Category 0 (Negligible) in accordance with the Burland Scale.

4.7. A sewer line runs beneath the existing basement of No 5 Branch Hill. The property, together with its neighbours at Nos 1 to 4, is served by this sewer. Concern was raised by residents in the neighbouring buildings regarding the access to the manhole for this drain. The BIA states that this access to the sewer, which is currently within the existing lightwell area, shall be preserved within the new structure using a sealed cover.

4.8. In response to Consultation Responses, regarding the stability of the retaining wall to 5 Upper Terrace, the Engineer has confirmed that stability of the carriageway and the adjoining structures will be maintained in the temporary and permanent case, with movements and damage impacts remaining within the limits predicted.

4.9. It is accepted that the development will not impact on the wider hydrogeological or hydrological environments, will not impact upon slope stability and is not in an area subject to flooding.

4.10. It is accepted that there are no slope stability concerns regarding the proposed development and it is not in an area prone to flooding.

5.0 CONCLUSIONS

5.1. The qualifications of the author are in accordance with CPG4 guidelines.

5.2. The proposed development comprises an extension of the existing basement to occupy a lightwell area and the BIA has confirmed the basement will be founded within the Bagshot formation.

5.3. Although the Bagshot formation is designated as a secondary Aquifer it is unlikely that the groundwater table will be encountered during the proposed excavation and construction works.

5.4. The BIA states underpinning to be the preferred method for basement construction. Temporary works information is provided. Damage impact to neighbouring structures is assessed to be Category 0 (Negligible) in accordance with the Burland Scale.

5.5. A combined sewer runs beneath the existing basement. The proposed development will allow appropriate future access to the sewer.

5.6. In response to Consultation Responses, the Engineer has confirmed that stability of the carriageway and the adjoining structures will be maintained.

5.7. It is accepted that the development will not impact on the wider hydrogeological or hydrological environments, will not impact upon slope stability and is not in an area subject to flooding.

5.8. The BIA meets the criteria of CPG Basements.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Whitmore, Neal	3 Branch Hill, NW3 7LT	16 August 2018	Access to sewer manhole.	The BIA states that access to the sewer will be maintained.
Minckwitz, Christopher de	4 Branch Hill, NW3 7LT	25 January 2018	-same as above-	-same as above-
Aveline, Alice and Robin	6 Branch Hill, NW3 7LT	25 January 2018	-same as above-	-same as above-
Greenway	Branch Hill Mews	24 August 2018	Concerns re assumptions of BIA and potential stability impact to 5 Upper Terrace	The Engineer has reviewed the information provided and confirmed stability will be maintained.

CampbellReith
consulting engineers

Appendix 2: Audit Query Tracker

None

Appendix 3: Supplementary Supporting Documents

Greenway Consultation Response (email and figure)

LBH Wembley response to Consultation Response (email)

----- Message from Alex Greenway <alex@greenwayarchitects.co.uk> on Fri, 24 Aug 2018 16:00:35 +0000 -----

To: "Whittingham, Gideon" <Gideon.Whittingham@camden.gov.uk>

cc: Liz Power <liz@greenwayarchitects.co.uk>

Subject: Re: 2017/6899/P - 5 Branch Hill

Dear Mr Whittingham,

Further to your e-mail below I note that you have now received a BIA from LBH Wembley Engineering.

The BIA produced makes reference to existing structure on the land of Branch Hill Mews. "Assumed high level pad foundation to retaining wall". This assumption is incorrect. The wall is not constructed as assumed which may effect on the proposed methods of construction and calculations.

The retaining wall to the property known as 5 Upper Terrace was constructed in an 'L' formation with the base leg of the L forming the road foundation level as shown in RED on the attached extracted section drawing. The existing is not as illustrated on page 35 (LBH4523) which forms part of the current application.

The 'L' shaped R.C. Retaining wall runs the width of the Branch Hill Mews access road and it is my understanding that the maximum resultant over turning pressure on the soil will be at the junction of the underpinning ('A' marked on the drawing attached) and that this must be taken into consideration in any design and construction sequence. Sliding of the wall may also be an issue.

I trust that you will consult with both the applicants Structural Engineers and the Camden checking Engineers Campbell Reith to see that the correct and accurate information is contained in the Basement Impact Assessment as it may well have serious implications to both the existing retaining wall to 5 Upper Terrace retaining wall and the roadway to Branch Hill Mews.

I also note that the proposal drawings still indicate on the drawing NO:P01 GROUND FLOOR PLAN that the proposed fire exit door opens out over the land owned by Branch Hill Mews. The existing door opens inwards. The proposed change in direction not only creates a safety issue as cars and pedestrians use this access road all day long and a door opening over a road way could be fatal but also this will not be permitted by the owners of Branch Hill mews. This may also have an implication on the floor plans which may require revision to be feasible.

Please can I request that you acknowledge receipt of this e-mail and confirm that you will be forwarding this information to the Structural engineers accordingly as this is a key requirement of a basement planning application.

Kind Regards,

Alex Greenway

For and on behalf of

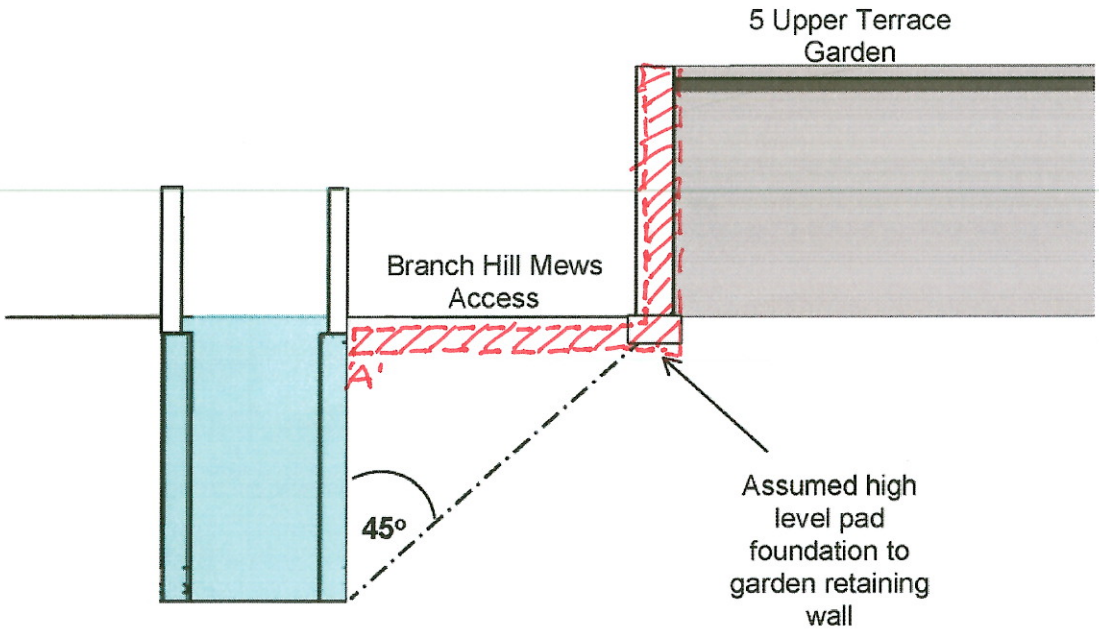
Branch Hill Mews, London NW3 7LT | +44 (0)20 7435 6091 | greenwayarchitects.co.uk

The deflections have been used in combination with the Burland damage assessment process that is based upon consideration of the theoretical deflection ratio that would be experienced by a masonry panel of a given height and length. The potential degree of damage due to the proposed excavations has been assessed for the structures identified to be potentially at risk in the previous section.

8.4.4.1 Branch Hill Mews – Car Port Boundary Wall (Section A-A')

The length of section is taken as15m and the wall height as 4m. The analysed section is directly adjacent to the underpinned sections of the boundary wall, hence the wall will experience up to 5mm of settlement and 5mm of horizontal movement, gradually reducing with increasing distance.

The maximum horizontal strain, εh (L) is assessed as 0.033%, producing a maximum deflection ratio Δ / L = -0.006, within a limiting tensile strain of 0.04%, resulting in a Burland Category 0 "Negligible" condition.



8.4.4.2 No. 5 Upper Terrace – Rear Garden Retaining Wall (Section B-B')

The central section of this retaining wall is placed approximately 2.5m away from the proposed underpinned boundary walls, near the edge of the highlighted potential zone of influence of the excavations. The horizontal and vertical movement predicted to occur to the garden retaining wall as a result of the underpinning excavations is predicted to be less than 5mm.

Hence the predicted damage to this structure as a result of the proposed works is within the Burland Category 0 "Negligible".

----- Message from Seamus Lefroy-Brooks <seamus@lbhgeo.co.uk> on Thu, 4 Oct 2018 13:57:56 +0000 -----

To: "Whittingham, Gideon" <Gideon.Whittingham@camden.gov.uk>

cc: Savvas Theodoulou <theodoulou2@aol.com>

Subject: RE: 2017/6899/P - 5 Branch Hill

Dear Gideon

I am writing in response to the comment made by Alex Greenway of Greenway Architects in regard to the above application concerning our BIA and the stability of the retaining wall to 5 Upper Terrace.

Where information on the configuration of neighbouring structures is uncertain, we are required to adopt worst case assumptions and this is the case in regards to the retaining wall to the rear garden of 5 Upper Terrace.

It can be stated that the presence of a reinforced concrete L-shape structure as now reported will provide substantially greater rigidity to the situation (in both plan and section) than that which has been assumed in the BIA and is to be welcomed.

Rest assured that care has been taken to ensure that full lateral support for the carriageway of Branch Hill Mews will be maintained throughout both the temporary condition and also in the permanent situation, and that a scheme of structural monitoring will be agreed between the party wall surveyors in order prevent any movement in excess of that which has been predicted.

In practice, should the monitoring pick up any movement, the amount and loading of the temporary horizontal propping (shown on page 28 et seq of the BIA) would simply be increased as necessary to prevent any movement of Branch Hill Mews and, in turn, of the retaining wall to the rear garden of 5 Upper Terrace.

Best Regards

Seamus Lefroy-Brooks

BSc(hons) MSc CEng MICE CGeol FGS CEnv MIEnvSc FRGS

SiLC RoGEP UK Registered Ground Engineering Adviser

T: 01280 812310 | M: 07836 205546 | www.LBHgeo.co.uk

London

Friars Bridge Court
41- 45 Blackfriars Road
London, SE1 8NZ

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

UAE

Office 705, Warsan Building
Hessa Street (East)
PO Box 28064, Dubai, UAE

T: +971 4 453 4735
E: uae@campbellreith.com