

77 Avenue Road,
London
NW8 6JD

Basement Impact Assessment
Audit

For
London Borough of Camden

Project Number: 12985-56

Revision: F1

October 2019

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	July 2019	Comment	GKemb12985-56-050619-77 Avenue Road-D1.docx	GK	HS	EMB
F1	October 2019	Planning	GKemb12985-56-031019-77 Avenue Road-F1.docx.docx	GK	HS	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 2019

Document Details

Last saved	03/10/2019 11:57
Path	GKemb12985-56-031019-77 Avenue Road-F1.docx.docx
Author	G Kite, BSc MSc DIC FGS
Project Partner	E M Brown, BSc MSc CGeol FGS
Project Number	12985-56
Project Name	77 Avenue Road
Planning Reference	2019/1747/P

Contents

1.0 Non-technical summary 1

2.0 introduction..... 3

3.0 Basement Impact Assessment Audit Check List..... 5

4.0 Discussion 9

5.0 Conclusions 11

Appendix

- Appendix 1: Residents' Consultation Comments
- Appendix 2: Audit Query Tracker
- Appendix 3: Supplementary Supporting Documents

1.0 NON-TECHNICAL SUMMARY

- 1.1. CampbellReith was instructed by London Borough of Camden (LBC) on 2 May 2019 to carry out an Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 77 Avenue Road, London NW8 6JD, Camden Reference 2019/1747/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 original submissions included two BIA reports prepared by Constructure Ltd and Chelmer Global Ltd. The revised submissions have been prepared by Constructure Ltd and GEA Ltd.
- 1.5. The authors of the revised BIA documents possess suitable qualifications in accordance with LBC guidance.
- 1.6. The site currently comprises a three-storey property with a single storey garage. The proposed development comprises the replacement of the existing structure with a new five-storey property including a basement and sub-basement level. The revised submissions confirm formation levels.
- 1.7. A site investigation indicates the site to be underlain by Made Ground overlying the London Clay Formation. It was reported that the River Tyburn may have been in close proximity to the site; however, no evidence was found during the ground investigation. There are no impacts to the wider hydrogeological environment.
- 1.8. Only one round of groundwater monitoring has been undertaken, in March 2017. Longer term monitoring and / or by the contractor in advance of the works is recommended in the BIA. Localised perched groundwater may be encountered in the Made Ground and this will need to be controlled during the proposed underpinning works.
- 1.9. The site investigation and BIA have been informed by a desk study. In the revised submissions, underground infrastructure and utility information is provided and discussed (see 1.13).
- 1.10. In the revised submissions, interpretative geotechnical information including retaining wall design parameters is provided.

- 1.11. Updated outline temporary works information has been presented. The basement will be constructed utilising underpinning and contiguous piling techniques. Reasonably conservative assumptions have been made in regards to pile toe depths.
- 1.12. In the revised submissions, an outline construction programme is presented.
- 1.13. A ground movement assessment (GMA) is presented which considers the movements and resultant impacts to neighbouring buildings. A maximum of Category 1 (Very Slight) damage in accordance with the Burland Scale is indicated. Impacts to identified utilities have not been assessed. Asset protection criteria should be agreed with asset owners.
- 1.14. An outline monitoring specification has been provided. The monitoring specification should be confirmed and agreed under the Party Wall Act.
- 1.15. The BIA notes that Avenue Road was subject to surface water flooding in 2002. The Environment Agency indicates the rear garden of the site to be at a 'medium' risk of surface water flooding with a low risk of flooding on the front driveway. Flood risk mitigation measures such as up-stands to protect lightwells and a ground level difference at external doorways are proposed. Protection against surcharging of the public sewers should be implemented.
- 1.16. The site is within a critical drainage area. The revised submissions indicate a marginal increase in impermeable site area. Attenuation SUDS to reduce off-site discharge flows is proposed. A final design should be agreed with LBC and Thames Water.
- 1.17. Non-technical summaries are presented in the revised submissions.
- 1.18. Discussion and requests for further information are presented in Section 4 and summarised in Appendix 2. Considering the revised submission, the BIA meets the criteria of CPG: Basements.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 2 May 2019 to carry out a Category C Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 77 Avenue Road, London NW8 6JD, Camden Reference 2019/1747/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:
- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.
 - Camden Planning Guidance (CPG): Basements.
 - Camden Development Policy (DP) 27: Basements and Lightwells.
 - Camden Development Policy (DP) 23: Water.
 - The Local Plan (2017): 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; 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 planning portal describes the proposal as: "*Demolition of existing dwelling and erection of replacement three-storey detached dwelling with double basement*".

The planning portal also confirmed the site does not lie within a Conservation Area and that the site is not listed and neither are the adjacent buildings.

2.6. CampbellReith accessed LBC's Planning Portal on 26th May 2019 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment and Structural Impact Assessment (ref 1678) dated April 2018 by Constructure Structural Designers.
- Basement Impact Assessment (ref BIA/9815) dated March 2018 by Chelmer Global Ltd including:
 - Factual Report (ref FACT/8562) dated 23 February 2017 by Chelmer Site Investigation Laboratories Ltd.
- Existing and Proposed Plans, Elevations and Section drawings (ref 1716) dated March and April 2018 by Wolff Architects.
- SuDSmart Pro Report (ref 64958R1REV4) dated June 2018 by GeoSmart Information Ltd.
- Design & Access Statement (ref 1716-PL2-DAS Revision 0) dated April 2018 by Wolff Architects.
- Arboricultural Assessment and Method Statement (ref 16377-AA2-AS) dated 14 June 2018 by Barrell Tree Consultancy.

2.7. CampbellReith were provided with the following documents in September 2019:

- Structural Method Statement Rev A (ref 1679) dated August 2019 by Constructure Structural Designers.
- Basement Impact Assessment (ref J19197) dated August 2019 by GEA Ltd.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	GEA Report
Is data required by Cl.233 of the GSD presented?	Yes	Updated in revised submissions.
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 plans/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	
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	The lost river Tyburn has been identified running in the vicinity of the site.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Updated in revised submissions.
Is a conceptual model presented?	Yes	Chelmer Global Ltd BIA report, Section 4. However, relative levels (ground level, proposed formation level, neighbouring foundation levels etc) to be confirmed.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Updated in revised submissions.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Basement formation within unproductive strata, London Clay.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Updated in revised submissions.
Is factual ground investigation data provided?	Yes	Chelmer Global Ltd BIA report, Section 3.5 and 3.6 and Appendix F.
Is monitoring data presented?	No	Chelmer BIA confirms that monitoring standpipes were installed to in BH1 and BH2 in February 2017 and return monitoring was completed/planned. No such data has been provided for review.
Is the ground investigation informed by a desk study?	Yes	Chelmer Global Ltd BIA report, Section 3 and Constructure BIA report, Section 2.
Has a site walkover been undertaken?	Yes	Chelmer Global Ltd undertook a site walkover in February 2017. site.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Updated in revised submissions.
Is a geotechnical interpretation presented?	Yes	Updated in revised submissions.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Updated in revised submissions.
Are reports on other investigations required by screening and scoping presented?	Yes	Updated in revised submissions.

Item	Yes/No/NA	Comment
Are baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	Updated in revised submissions.
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	Yes	Updated in revised submissions.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	Updated in revised submissions.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Updated in revised submissions.
Has the need for monitoring during construction been considered?	Yes	Constructure Ltd BIA report, Section 7.2 and 7.3.
Have the residual (after mitigation) impacts been clearly identified?	Yes	Updated in revised submissions.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	Updated in revised submissions.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Updated in revised submissions.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	Updated in revised submissions.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	Updated in revised submissions.

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

4.0 DISCUSSION

- 4.1. The original submissions included two BIA reports prepared by Constructure Ltd and Chelmer Global Ltd. The revised submissions have been prepared by Constructure Ltd and GEA Ltd.
- 4.2. The authors of the revised BIA documents possess suitable qualifications in accordance with LBC guidance.
- 4.3. The site currently comprises a three-storey property with a single storey garage extension to the southeast which is adjoined to No. 73-75 Avenue Road. The proposed development comprises the replacement of the existing structure with a new five-storey property including a basement and sub-basement level. The revised submissions confirm formation levels.
- 4.4. It is noted that the site walkover and original documents were prepared more than 2 years ago. The updated documents describe the site and the closest neighbouring structures.
- 4.5. A site investigation was undertaken by Chelmer Site Investigation Laboratories Ltd (now Chelmer Global) in February 2017 comprising two boreholes on site (one in the rear garden, one on the front driveway) drilled to 15.1m and 25.5m bgl respectively. The investigation identified Made Ground underlain by the London Clay Formation. With regards to groundwater, a slight seepage was noted in BH1 during the ground investigation at 3.8m bgl. Monitoring standpipes were installed to 15.0m and 20.0m bgl in BH1 and BH2 respectively with one return monitoring visit being completed in March 2017. BH1 was recorded as dry to the maximum measurable depth of the standpipe (14.7m). No data has been provided for BH2 in March 2017. The BIA states that 'two further monitoring visits are currently planned to monitor groundwater levels in BH1 and BH2' but no such data has been provided for review. The Chelmer BIA states that waterproofing and groundwater control may be required during the construction works. The BIA also recommends that further groundwater monitoring is undertaken on site to 'record the long-term data which is more representative of the low permeability strata'.
- 4.6. A tributary of the River Tyburn has been identified (Lost Rivers of London, Barton 1992), running in the vicinity of the site. However, the site investigation found no evidence of the former river during the study and Chelmer Global Ltd anticipate that the tributary has been culverted and now runs beneath the carriageway in Avenue Road. It is accepted that there are no significant groundwater flows which could be adversely affected and that there will be no impact to the local or wider hydrogeological environment.
- 4.7. The site investigation and BIA have been informed by a desk study broadly in accordance with the GSD Appendix G1. In the revised submissions, underground infrastructure and utility information is provided and discussed (see 4.12).

- 4.8. In the revised submissions, interpretative geotechnical information including retaining wall design parameters is provided.
- 4.9. Updated outline temporary works information has been presented. The proposed development will be formed using contiguous piled retaining walls and underpinning. Outline pile calculations are presented indicating proposed retaining wall pile lengths. Underpinning works include a section to be undertaken in three lifts. It is noted that these works are adjacent to the boundary with 73 – 75 Avenue Road, where a separate planning application is currently being progressed that would include a double storey basement of similar depth to the proposed underpinning.
- 4.10. In the revised submissions, an outline construction programme is presented.
- 4.11. Chelmer Global confirmed that Nos 73-75 and 81 Avenue Road have registered basement applications. The proposed works to the immediate neighbour, 73-75 Avenue Road, has not yet been undertaken. However, conservative assumptions have been adopted within stability assessments, with both adjacent properties assessed as having no basement.
- 4.12. An updated ground movement assessment (GMA) is presented which considers the movements relating to the proposed basement construction and the effect on the adjacent properties at 73-75 Avenue Road and 79 Avenue Road. A maximum of Category 1 (Very Slight) damage in accordance with the Burland Scale is indicated. The GMA is considered to be reasonably conservative. However, no impact assessment has been undertaken for the identified utilities running under the carriageway. Consultation with asset owners should be undertaken, with asset protection criteria agreed, as applicable.
- 4.13. An outline monitoring specification has been provided. It should be confirmed and agreed under the Party Wall Act.
- 4.14. The BIA notes that Avenue Road was subject to surface water flooding in 2002. The Environment Agency indicates the rear garden of the site to be at a 'medium' risk of surface water flooding with a low risk of flooding on the front driveway. Flood risk mitigation measures such as up-stands to protect lightwells and a ground level difference at external doorways are proposed. Protection against surcharging of the public sewers should be implemented.
- 4.15. The site is within a critical drainage area. The revised submissions indicate a marginal increase in impermeable site area. Attenuation SUDS to reduce off-site discharge flows is proposed. A final design should be agreed with LBC and Thames Water.
- 4.16. Non-technical summaries are presented in the revised submissions.

5.0 CONCLUSIONS

- 5.1. The authors of the revised BIA documents possess suitable qualifications.
- 5.2. The revised submissions confirm formation levels and proposed construction methodology.
- 5.3. A site investigation indicates the site to be underlain by Made Ground overlying the London Clay Formation. There are no impacts to the local or wider hydrogeological environment. The BIA notes localised perched groundwater may be encountered in the Made Ground and this will need to be controlled during the proposed underpinning works.
- 5.4. Outline utilities / underground infrastructure information is provided.
- 5.5. In the revised submissions, interpretative geotechnical information has been presented.
- 5.6. A ground movement assessment (GMA) indicates a maximum of Category 1 (Very Slight) damage to neighbouring structures. Impacts to identified utilities have not been assessed. Asset protection criteria should be agreed with asset owners.
- 5.7. An outline monitoring specification has been provided. The monitoring specification should be confirmed and agreed under the Party Wall Act.
- 5.8. Flood risk mitigation measures are proposed.
- 5.9. The site is within a critical drainage area. The revised submissions indicate a marginal increase in impermeable site area. Attenuation SUDS to reduce off-site discharge flows is proposed. A final design should be agreed with LBC and Thames Water.
- 5.10. An outline construction programme has been presented.
- 5.11. Non-technical summaries are provided in revised submissions.
- 5.12. Requests for further information are summarised in Appendix 2. Considering the revised submission, the BIA meets the criteria of CPG: Basements.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status/Response	Date closed out
1	BIA	The proposed development and assumptions adopted for assessment should be consistently presented between BIA documents.	Closed – GEA Report	October 2019
2	BIA	The qualifications of the authors of the revised Chelmer BIA (2018) should be demonstrated.	Closed – GEA Report	October 2019
3	BIA	Underground infrastructure information should be provided (utility / transport).	Closed – Constructure Report	October 2019
4	BIA	An outline construction programme should be provided.	Closed – Constructure Report	October 2019
5	BIA	Non-technical summaries to be presented in any revised submissions	Closed – GEA Report	October 2019
6	Stability	Groundwater conditions should be confirmed in advance of the works to ensure appropriate control of construction works during underpinning.	Note Only	N/A
7	Stability	Interpretative geotechnical information to be provided, including retaining wall design parameters.	Closed – GEA Report	October 2019
8	Stability	Assumptions made within the GMA should be reviewed and clarified as indicated in Section 4.	Closed – GEA Report	October 2019
9	Hydrology	Changes in impermeable site area to be confirmed. Drainage proposals including sufficient assessment and mitigation (if required) to be provided.	Closed – Constructure Report	October 2019

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: Friars Bridge Court, 41- 45 Blackfriars Road, London SE1 8NZ
VAT No 974 8892 43