

39 Fitzjohn's Avenue,
London NW3 5JY

Basement Impact Assessment
Audit

For

London Borough of Camden

Project Number: 12727-88
Revision: F1

April 2019

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	12727-88-070818-39 Fitzjohn's Avenue-D1.doc	A Gleeson	R Morley	R Morley
F1	April 2019	Planning	CBemb12727-88-150419-39 Fitzjohn's Avenue-F1.doc	C Botsialas	E M Brown	E M Brown

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	15/04/2019 15:17
Path	CBemb12727-88-150419-39 Fitzjohn's Avenue-F1.doc
Author	C Botsialas, CEng MIMMM, CGeol, FGS, RoGEP Specialist
Project Partner	E M Brown, BSc, MSc, CGeol, FGS
Project Number	12727-88
Project Name	39 Fitzjohn's Avenue, NW3 5JY
Planning Reference	2018/2415/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 12

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) to carry out an audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 39 Fitzjohn's Avenue, NW3 5JT (planning reference 2018/2415/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 reports have been prepared by RWA London Civil and Structural Engineers and LBH Wembley Engineering. The BIA reports have been reviewed by a professional with suitable qualifications in accordance with CPG.
- 1.5. The proposal is to excavate a basement to a maximum depth of 7m by underpinning locally the existing lower ground floor. A retaining wall is proposed for the construction of a light well.
- 1.6. The revised BIA reports include screening, scoping, site investigation and impact assessment stages as required by CPG.
- 1.7. Ground investigation was undertaken and a report has been issued presenting factual and interpretative information.
- 1.8. The proposed basement will be founded within London Clay Formation in generally dry conditions.
- 1.9. The proposed development will result in an increase in garden area because of the proposed removal of the existing tarmac tennis court.
- 1.10. An SUDs Strategy report has been prepared presenting various options for mitigating potential hydrological impacts.
- 1.11. The Ground Movement Assessment (GMA) indicates "Very Slight" damage for the neighbouring building to the north, which is in accordance with CPG. Negligible damage is indicated for the infrastructure in the vicinity.
- 1.12. Consultation with Network Rail should be undertaken to establish any additional requirements with regard to the existing railway tunnels in the proximity.

- 1.13. An outline monitoring plan is presented.
- 1.14. Temporary fencing is proposed for the protection of nearby trees during construction.
- 1.15. Indicative temporary works proposals, underpinning sequence and retaining wall calculations are provided.
- 1.16. It is accepted that the development will have no impact upon the hydrogeological conditions or the slope stability of the site.
- 1.17. A non-technical summary has been provided.
- 1.18. Based on the above comments, it can be confirmed that the proposal adheres to the requirements of CPG Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 21 June 2018 to carry out a Category C Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 39 Fitzjohn's Avenue, NW3 5JY (planning reference 2018/2415/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 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;

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 *"Alterations and extensions associated with conversion of existing dwelling (Class C3) into 20 flats (5x1 bed; 6x2 bed; 7x3 bed; 2x4 bed) and 1 x 4 bed house (Class C3)"*.

2.6. The Audit Instruction also confirmed that 39 Fitzjohn's Avenue does not involve and nor is a neighbour to, listed buildings.

- 2.7. CampbellReith accessed LBC's Planning Portal in July 2018 and gained access to the following relevant documents for audit purposes:
- Design and Access Statement dated April 2018;
 - Basement Impact Assessment (BIA) Rev. E dated May 2018 by RWA London;
 - Site Location Plan by GH+MRP dated April 2018;
 - Existing and Proposed Plans, Elevations & Sections by GH+MRP dated April 2018;
 - Planning Statement dated April 2018;
 - Tree Plan and survey April 2018;
 - Consultation responses (3 no.).
- 2.8. CampbellReith issued a BIA audit report (rev. D1) on 07/08/2018 raising a number of queries on the above relevant documents.
- 2.9. The following reports were received in September 2018:
- "Desk Study and Basement Impact Assessment Report for Marsefield Gardens/Fitzjohn's Avenue NW3 5SY", dated 19 September 2017, report reference no. P1135J1199 ver.1.0, issued by Jomas Associates Ltd;
 - "Ground Investigation and Basement Impact Assessment for 39 Fitzjohn's Avenue NW3 5SY", dated 14 November 2017, report reference no. P1135J1199 ver.1.0, issued by Jomas Associates Ltd;
- 2.10. The following revised reports were received from applicant's engineer LBH Wembley Engineering in December 2018 and April 2019, in response to the queries raised in the BIA audit report (rev. D1):
- "Addendum to Basement Impact Assessment in connection with proposed development at No. 39 Fitzjohn's Avenue Camden London NW3 5JY", dated 12 April 2019, report reference no. LBH4498bia ver.1.3, issued by LBH Wembley Engineering;
 - "Outline SuDS Strategy in connection with proposed development at No. 39 Fitzjohn's Avenue Camden London NW3 5JY", dated 20 December 2018, report reference no. LBH4498suds ver.1.1, issued by LBH Wembley Engineering;
 - "Planning Application Basement Impact Assessment, 39 Fitzjohn's Avenue London NW3 5JY", dated 23 November 2018, rev.F, issued by RWA London Civil & Structural Engineers.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Refer to comment in audit paragraph 4.1.
Is data required by Cl.233 of the GSD presented?	Yes	An outline construction methodology and sequence of works is provided in Section 5 of the Addendum BIA. Information has been provided on mitigation measures in Section 7 of the Addendum BIA report.
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	Relative maps to support screening questions have been provided in Section 10 of the Addendum BIA and in the appendices of the revised RWA BIA report.
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	Justification for 'No' answers is provided. A response to question No 4 is presented in the Addendum BIA report.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Justification for 'No' answers is provided.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	An outline SuDS strategy is provided. A response to question No 3 is presented in the Addendum BIA report. Justification for 'No' answers is provided.

Item	Yes/No/NA	Comment
Is a conceptual model presented?	Yes	A conceptual model indicating the ground conditions is presented in the Ground Investigation report.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	In Section 7.2 of the Desk Study and in Section 3.2 of the Addendum BIA report.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	As above.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	As above.
Is factual ground investigation data provided?	Yes	In the Ground Investigation report.
Is monitoring data presented?	Yes	In Section 4.2 of the Ground Investigation report.
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	Yes	Refer to Section 2.2 of the Desk Study.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Refer to Section 5.1 of the revised RWA BIA report.
Is a geotechnical interpretation presented?	Yes	In Section 9 of the Ground Investigation report and Section 6.2 of the Addendum BIA report.
Does the geotechnical interpretation include information on retaining wall design?	Yes	As above.
Are reports on other investigations required by screening and scoping presented?	No	An SuDs Strategy report is provided. A Ground Movement Assessment is presented in Section 6 of the Addendum BIA report.

Item	Yes/No/NA	Comment
		<p>The need for Consultation with Network Rail is discussed in Section 7.3.4 of the Addendum BIA report.</p> <p>Indicative details of the proposed temporary works and the construction methodology are presented in the revised RWA BIA report and in the Addendum BIA report.</p>
Are the baseline conditions described, based on the GSD?	Yes	A GMA and a Ground Investigation report have been provided.
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	An impact assessment is presented in Section 7 of the Addendum BIA report.
Are estimates of ground movement and structural impact presented?	Yes	Estimates of ground movements are provided in Section 6 of the Addendum BIA together with a discussion of the anticipated impact on the surrounding structures.
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	Indicative underpinning sequence and temporary works proposals have been provided. Mitigation options are discussed in the SuDS Strategy report.
Has the need for monitoring during construction been considered?	Yes	Refer to Section 7 of the Addendum BIA report.
Have the residual (after mitigation) impacts been clearly identified?	N/A	There will be no residual impacts according to Section 7.4 of the Addendum BIA report.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	Refer to the GMA in the Addendum BIA report.

Item	Yes/No/NA	Comment
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	An outline SuDS is also presented as a separate report, which discusses various SuDS type features/options that could be used as part of the proposed development.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	Refer to Addendum BIA report and SuDS Strategy report.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	Refer to Section 6.6.1 of the Addendum BIA report.
Are non-technical summaries provided?	Yes	A non-technical summary is presented in the Addendum BIA report.

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out by RWA Civil & Structural Engineering Consultants. An Addendum BIA report has been prepared and issued by LBH Wembley Engineering. According to the latter report, both the original BIA and the Addendum BIA reports have been reviewed by a professional with suitable qualifications (CEng, MICE, CGeol) according to Section 4.7 of Camden Planning Guidance Basements (CPG).
- 4.2. The revised RWA BIA report (rev. F) includes screening, scoping, site investigation and impact assessment stages as required by CPG. Screening questions missed from the revised BIA have been included and discussed in the Addendum BIA report.
- 4.3. The LBC instruction to proceed with the audit identified that the basement proposal neither involved a listed building nor was adjacent to any listed buildings. The Design & Access Statement identified that 39 Fitzjohn's Avenue is located in the Fitzjohns & Netherhall Conservation Area.
- 4.4. 39 Fitzjohn's Avenue includes a semi-detached two storey Victorian house with a partial lower ground floor. The adjoining building to the north is a later extension, which does not currently have a basement. Both buildings are to be refurbished as part of the current redevelopment, converting them into 20 apartments and one house, however, it is only proposed to extend the basement beneath the Victorian house.
- 4.5. The proposed works involve rebuilding and extending the Victorian property whilst retaining the façade. The proposed basement will comprise two storeys and be extended to approximately 3m to 7m below ground level (bgl). The two-storey basement is proposed to be constructed by underpinning locally the existing lower ground floor and forming a new retaining wall towards the light well area. Structural drawings showing the proposed basement are presented in the revised RWA BIA report.
- 4.6. Further to a relevant comment in D1 audit report, the Ground Investigation report (GI) dated 14 November 2017, report reference no. P1135J1199 ver.1.0, issued by Jomas Associates Ltd, has been provided for this audit. The GI report presents factual ground investigation data, laboratory test results, and sufficient geotechnical interpretation. Design parameters and geotechnical engineering recommendations are presented in Section 9 of that report.
- 4.7. Based on the available ground investigation information the BIA confirms the basement will be founded within the London Clay Formation. No groundwater was encountered in any of the monitoring wells during drilling. All wells were reported to be dry during return monitoring visits with the exception of borehole WS5, where water was recorded, during one visit, at a depth of 3.85m bgl. According to the GI report, it is considered likely that this water level represents

surface water ingress rather than the natural ground water level. Hence, it is indicated that the basement will be constructed in generally dry conditions.

- 4.8. An outline SuDS Strategy report has been provided. According to the Addendum BIA report, the SuDS Strategy report supersedes the SuDS assessment presented in Appendix 7 of the revised (rev. F) RWA BIA report. As such, the latter one should be disregarded. The SuDS Strategy report suggests that although the new building area is greater than the existing, the development will result in a net increase in garden area as a result of the proposed removal of the existing tarmac tennis court. The SuDS Strategy report has taken into account the provisions of CPG and has considered the feasibility of SuDS options for this site. A strategy to mitigate the risk of flooding across the site is presented in accordance with 2015 CIRIA C753 SuDS manual. SuDS options are discussed including swales, sumps, pervious paving, porous substrate and attenuation tanks to mitigate any potential hydrological impacts. Initial SuDS calculations are appended. A Flood Risk Assessment has not been provided but it is anticipated that the scheme will be assessed by Thames Water and as such will be considered at a later stage prior to construction.
- 4.9. The Ground Movement Assessment (GMA) presented in the Addendum BIA report indicates that building damage to the neighbouring Northern Wing Extension will be within Burland Category 1 "Very Slight", which is in accordance with the criteria of CPG. The impact on the adjacent Network Rail Belsize Tunnels is anticipated to be less than 1% diametrical distortion of the tunnels, however, a detailed asset impact assessment and consultation with the Network Rail should be undertaken. Negligible movement (<5mm settlement) is anticipated on the pavement to Nutley Terrace which lies approximately 1m from the southern boundary of the proposed basement, assuming reasonable standards of workmanship during construction.
- 4.10. An outline monitoring plan is presented in the Addendum BIA report with trigger values and contingent actions if required.
- 4.11. It is proposed to remove a number of trees as part of the proposed development which is not anticipated to have an impact on existing foundations. A tree survey and a protection plan have been issued with temporary fencing proposed during construction for the protection of the remaining trees in the proximity.
- 4.12. Further details of indicative temporary propping proposals including underpinning sequencing and propping layouts are discussed in the revised BIA and the Addendum BIA reports. Indicative retaining wall calculations are also provided in the revised BIA report.
- 4.13. A ground bearing floor slab is proposed for the basement that should cater for the heave forces arising from the excavation.

- 4.14. Due to the presence of London Clay Formation, which is considered impermeable and the indication of generally dry conditions across the site, it is accepted that the development will have no impact upon the hydrogeological conditions.
- 4.15. It is accepted that there are no slope stability concerns regarding the proposed development.
- 4.16. A non-technical summary has been included in the Addendum BIA report.
- 4.17. Based on the above comments, it can be confirmed that the proposal adheres to the requirements of CPG Basements.

5.0 CONCLUSIONS

- 5.1. The BIA reports have been reviewed by a professional with suitable qualifications in accordance with CPG.
- 5.2. The revised BIA reports include screening, scoping, site investigation and impact assessment stages as required by CPG.
- 5.3. The proposal is to excavate a basement to a maximum depth of 7m by underpinning locally the existing lower ground floor. A retaining wall is proposed for the construction of a light well.
- 5.4. The GI report presents factual and interpretative information.
- 5.5. The proposed basement will be founded within London Clay Formation in generally dry conditions.
- 5.6. The proposed development will result in an increase in garden area because of the proposed removal of the existing tarmac tennis court.
- 5.7. An SUDs Strategy report has been prepared including various options for mitigating potential hydrological impacts.
- 5.8. The Ground Movement Assessment (GMA) indicates Burland Category 1 "Very Slight" damage for the neighbouring building to the north, which is in accordance with CPG. Negligible damage is indicated for the infrastructure in the vicinity.
- 5.9. Consultation with Network Rail should be undertaken to establish any additional requirements with regard to the existing railway tunnels in the proximity.
- 5.10. An outline monitoring plan is presented.
- 5.11. Temporary fencing is proposed for the protection of nearby trees during construction.
- 5.12. Indicative temporary works proposals, underpinning sequence and retaining wall calculations are provided.
- 5.13. It is accepted that the development will have no impact upon the hydrogeological conditions or the slope stability of the site.
- 5.14. A non-technical summary has been provided.
- 5.15. The proposal adheres to the requirements of CPG Basements.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Re: Thames Water	Not available	16/7/2018	Waste and drainage water discharge.	SuDS Strategy report presents options to be adopted for the proposed scheme.
Williams On behalf of Netherhall Neighbourhood Association	Not available	20/7/2018	Loss of trees and damage to existing trees.	A tree survey report has been provided. Temporary fencing is proposed for the protection of nearby trees during construction.

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	Qualification of authors to be confirmed as required by Section 3.6 of CPG4.	Closed	20/12/2018
2	BIA	Answers to be provided for all screening questions set out in CPG Basements, and scoping revised accordingly.	Closed	20/12/2018
3	Stability	Retaining wall design parameters should be provided based on site specific geotechnical data. Retaining wall calculations should be provided to justify the feasibility of the proposed scheme.	Closed	20/12/2018
4	Stability	A formal ground movement assessment is required noting impacts to and protection of all neighbouring properties and infrastructure. Mitigation measures to be addressed to limit Damage to Category 1 on the Burland Scale. Impact and protection of infrastructure assets should be agreed with the asset owners.	Closed	20/12/2018
5	Stability	Once the geotechnical and structural design elements have been confirmed and the GMA updated, the monitoring strategy should be considered further. An outline monitoring plan should be provided to demonstrate that works will be controlled to protect surrounding structures / assets.	Closed	20/12/2018
6	Stability	Evidence should be provided that Network Rail and other asset owners have been consulted and asset protection agreements entered into, as applicable.	Closed	20/12/2018
7	Hydrology/Hydrogeology	A SUDS assessment should be provided due the significant increase in hardstanding, which should be produced in accordance with The London Plan along with Camden planning policy.	Closed	20/12/2018
8	Stability	Further details of construction details including confirmation of underpinning depths and sequencing to be provided. Drawings should be clarified to confirm where the existing structure is to be underpinned and where the new retaining walls are to be constructed. Further detail to be provided for temporary propping proposals and construction methodology/sequencing.	Closed	20/12/2018
9	BIA	Non-technical summaries should be included in any updated BIA submissions.	Closed	20/12/2018
10	BIA	Site investigation document 'JAL BIA report J1135J1199' to be provided.	Closed	20/12/2018

Appendix 3: Supplementary Supporting Documents

None

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

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