

8a Hampstead Hill Gardens
London, NW3 2PL

Basement Impact Assessment
Audit

For
London Borough of Camden

Project Number: 13693-33
Revision: D1

March 2022

Campbell Reith Hill LLP
15 Bermondsey Square
London
SE1 3UN

T: +44 (0)20 7340 1700
F: +44 (0)20 7340 1777
E: london@campbellreith.com
W: www.campbellreith.com

Document History and Status

Revision	Date	Purpose/Status	File Ref	Author	Check	Review
D1	February 2022	Comment	MEgk-13693-33-100322-8a Hampstead Hill Gardens - D1.doc	ME	NS	GK

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 2022

Document Details

Last saved	10/03/2022 10:53
Path	MEgk-13693-33-100322-8a Hampstead Hill Gardens - D1.doc
Author	M Elias, BEng, MSc
Project Partner	E M Brown, BSc MSc CGeol FGS
Project Number	13693-33
Project Name	8a Hampstead Hill Gardens, London, NW3 2PL
Planning Reference	2021/5750/P

Contents

1.0 Non-technical summary 1

2.0 Introduction 3

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

4.0 Discussion 8

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) to carry out an audit on the Basement Impact Assessment submitted as part of the Planning Submission documentation for 8a Hampstead Hill Gardens (planning reference 2021/5750/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 (BIA) 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 proposed development comprises demolition of the existing garage unit followed by the construction of a two storey building including single storey basement.
- 1.5. The qualifications of the individuals involved in the BIA are in accordance with LBC guidelines.
- 1.6. Architectural drawings presented do not indicate the existing and proposed basement levels and should be updated to be fully dimensioned.
- 1.7. Screening and scoping assessments are presented, supported by desk study information.
- 1.8. A site investigation has been undertaken indicating the basement will be constructed within the London Clay Formation. The borehole logs, laboratory tests and monitoring data are not provided and are required.
- 1.9. The BIA indicates that there will be no impact to the wider hydrogeological environment. Temporary groundwater control measures may be required during construction.
- 1.10. The geotechnical parameters proposed in the BIA should be adopted consistently in the structural calculations.
- 1.11. A SuDS Assessment is presented to demonstrate that there will be no adverse impacts to the hydrological environment. A Pre-application Enquiry has been submitted to Thames Water to confirm that capacity exists in the receiving public sewer.
- 1.12. The Ground Movement Assessment (GMA) should be reviewed in accordance with the comments presented in Section 4. The GMA should include assessment of impacts to the highway.

- 1.13. Queries and requests for information are summarised in Appendix 2. Until the clarifications requested are presented, the BIA does not meet the requirements of Camden Planning Guidance: Basements.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on the 12th of January 2022 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 8a Hampstead Hill Gardens, London, NW3 2PL, planning reference 2021/5750/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.
- 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 *"Single storey rear extension, with basement below (including car lift and parking), garden roof terrace above and single storey link to main dwelling, to replace existing single storey garage building; 3rd floor front extension to main dwelling; creation of 4th floor roof terrace on roof of main dwelling, including access thereto; external alterations to front of main dwelling, including re-pointed brickwork, new timber doors, window and cladding and replacement of garage doors with fenestration; creation of garden to front to replace driveway parking"*.

2.6. CampbellReith accessed LBC's Planning Portal on the 24th of January 2022 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report by Soiltechnics, ref: STT5321-R01 Rev D, dated November 2021.
- Structural Method Statement and Drainage Strategy by Price & Myers LLP, Rev 02, dated November 2021.
- Construction/ Demolition Management Plan by SM Planning, dated 18 November 2021.
- Design and Access Statement by Hayhurst & Co Architects, dated November 2021.
- Existing architectural drawings, plans and sections by Hayhurst & Co Architects, dated November 2021.
- Proposed architectural drawings, plans and sections by Hayhurst & Co Architects, dated November 2021.
- Arboricultural Report by Simon Pryce Arboriculture, ref: 21/061, dated 19 September 2021.
- Tree Survey Plans by Simon Pryce Arboriculture, ref: 21/061, undated.
- Planning Consultation Responses as detailed in Appendix 1.

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	Sections 7 & 8 of the BIA and Sections 4 & 5 of the Structural Method Statement and Drainage Strategy.
Are suitable plan/maps included?	Yes	All maps to support screening are included in the BIA.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	No	Levels and dimensions are not included in the architectural drawings.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 4.3 of the BIA.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 4.2 of the BIA.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 4.4 of the BIA.
Is a conceptual model presented?	Yes	Section 6.3 of the BIA.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Sections 5.2 and 5.3 of the BIA.

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	NA	No items were carried to scoping.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	NA	No items were carried to scoping.
Is factual ground investigation data provided?	No	Section 6 of the BIA. However, boreholes logs and laboratory test results should be provided.
Is monitoring data presented?	No	Monitoring data should be provided.
Is the ground investigation informed by a desk study?	Yes	Section 3 of the BIA.
Has a site walkover been undertaken?	Unknown	Not explicitly stated.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Section 6.4 of the BIA.
Is a geotechnical interpretation presented?	Yes	Section 7 of the BIA. However, laboratory tests results used to derive the geotechnical parameters should be provided.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 7 of the BIA. Inconsistencies between the geotechnical parameters proposed in the BIA and those adopted in the structural calculations.
Are reports on other investigations required by screening and scoping presented?	Yes	Structural Method Statement and Drainage Strategy, GMA and Arboricultural Report are provided.
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	Section 6.4 of the BIA.

Item	Yes/No/NA	Comment
Is an Impact Assessment provided?	Yes	Section 8 of the BIA
Are estimates of ground movement and structural impact presented?	Yes	Section 7.3 of the BIA. GMA provided, however clarifications requested.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	Further clarification is required as per Section 4.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Section 8 of the BIA. Sections 6.1, 8 and 9 of the Structural Method Statement and Drainage Strategy. To be revised following the updated GMA.
Has the need for monitoring during construction been considered?	Yes	Movement monitoring has been suggested in section 6.1 of the Structural Method Statement.
Have the residual (after mitigation) impacts been clearly identified?	Yes	However, subject to further review pending any revisions as requested in Section 4.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Section 7.3 of the BIA. GMA provided, clarifications requested.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Sections 8 and 9 of the Structural Method Statement and Drainage Strategy.
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	Section 7.3 of the BIA. However, subject to GMA revision.
Are non-technical summaries provided?	Yes	Non-Technical Summary section of the BIA.

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out by Soiltechnics and the individuals concerned in its production have suitable qualifications.
- 4.2. The LBC Instruction to proceed with the audit identified that the basement proposal is close to 4 Hampstead Hill Gardens and 2 Hampstead Hill Gardens (to the rear / west), designated as Grade II Listed buildings.
- 4.3. The site comprises the existing residential property (No 8a Hampstead Hill Gardens) which is part of a four storey building. The site also includes a large single storey garage unit at lower ground floor level to the rear of the existing property and associated hardstanding. The garage has retaining walls at the rear and partly along the return walls next to the neighbouring properties 6 and 10 Hampstead Hill Gardens.
- 4.4. The proposed development comprises demolition of the existing single storey reinforced concrete garage building, followed by the construction of a two storey building including a single storey basement. The basement is constructed on the existing footprint and a new living space is created on the ground floor. The roof will serve as terrace with planted areas.
- 4.5. Architectural drawings presented do not indicate levels and dimensions and should be updated to be fully dimensioned.
- 4.6. It is understood that 10 Hampstead Hill Gardens has a lower ground floor. However, the footprint extent is not known. The BIA indicates that considering the age and the size of 8 Hampstead Hill Gardens the foundations could be placed at circa 1.00m below ground level (bgl), although this has not been proven.
- 4.7. Screening and scoping assessments are presented and informed by desk study information. Most relevant figures/maps from the Arup GSD and other guidance documents are referenced within the BIA to support responses to screening questions.
- 4.8. A ground investigation was undertaken in April 2021. Ground conditions comprise Made Ground overlying Head Deposits and the London Clay Formation. Groundwater was encountered during the site investigation within the Head Deposits. Post fieldwork monitoring recorded groundwater at a depth of circa 2.50m bgl. However, the borehole logs, laboratory tests results and monitoring data were not provided and should be presented.
- 4.9. The BIA states that groundwater flow rates will be relatively minimal given the predominantly clayey nature of the soil. Localised pumping will be implemented to deal with perched water during construction of the basement, if needed. There will be no impact to the wider hydrogeological environment.

- 4.10. The site is at low to medium risk of flooding from surface water. The BIA indicates the proposed development will not result in an increase in hardstanding areas. The possibility of implementing SuDS at the site was assessed and a green roof is being included in the development, which will reduce runoff rates. In addition, an attenuation tank is proposed to store surface water before discharging into the combined sewer on Hampstead Hill Gardens. It is accepted that the proposed development will not increase the risk of flooding.
- 4.11. The Structural Method Statement (SMS) indicates the proposed construction will adopt an underpinning technique to construct reinforced concrete L shaped retaining walls around the perimeter of the basement. Reinforced concrete slabs will prop the walls in the permanent case, with temporary propping adopted during construction. The L shaped retaining walls will be founded on London Clay. Based on the SMS it is understood that the underpins will be installed in two stages.
- 4.12. The geotechnical parameters to be adopted in the basement design and ground movement calculations are presented in the BIA, Section 4. However, the geotechnical testing should be presented to verify the parameters adopted. Additionally, the parameters proposed in the BIA should be adopted consistently in the structural calculations.
- 4.13. A Ground Movement Assessment (GMA) has been undertaken to determine ground movements and consequential damage to neighbouring properties. PDisp has been used to estimate vertical ground movements due to excavation and the settlement due to structural loads. It should be confirmed that the loads adopted in the PDisp model are consistent with the structural loads presented in the SMS, and the graphical outputs for loading and resulting movement contours should be presented.
- 4.14. The PDisp calculated displacements have been imported into XDisp and combined with the estimated ground movements due to underpin construction. Section 7.3.7 of the BIA indicates that “pre-defined ground movement curves” for excavation (i.e. based on CIRIA C760) have been omitted to avoid “double counting”; however, it’s unclear how horizontal movements have been estimated due to excavation effects, which should be clarified.
- 4.15. Notwithstanding any revisions to address the comments in 4.13 and 4.14, typically ground movements due to underpinning would be anticipated to be in the range of 5 to 10mm vertically and horizontally per stage. The SMS indicates two stages of underpinning, and therefore any revisions to the GMA should consider whether movement estimates are sufficiently conservative.
- 4.16. It’s noted that the GMA assumes foundations to neighbouring buildings are at 1.00m bgl. Unless foundation depths are proven, a conservative assumption should be made (noting also local resident’s comments, Appendix 1).

- 4.17. 8 Hampstead Hill Gardens and 10 Hampstead Hill Gardens adjacent to the proposed development have been considered in the GMA. The GMA predicts damage up to Burland Category 2 (Slight) damage will impact neighbouring properties which is not permissible under the current policy. The BIA states that the GMA model is not considered to be an “accurate representation” of movement / damage and states that based on the adopted construction sequence, method and propping, damage can be limited to Category 1 (Very Slight).
- 4.18. Damage to neighbouring structures is required to be within Category 1 (Very slight). Following any revisions to the GMA to address the previous comments, the basement construction proposals must incorporate sufficient mitigation measures to ensure damage to neighbours is maintained within Category 1. Movement monitoring of the adjoining properties has been proposed in the SMS. This should be reviewed and revised as required to demonstrate that construction works and consequential ground movements can be controlled and limited to maintain damage to neighbours within permissible limits.
- 4.19. It is noted that various types of infrastructure are present nearby the site including Thames Water sewers and a Network Rail tunnel. This GMA currently addresses neighbouring buildings only and the owners of the infrastructure may require separate assessments to satisfy their requirements. The GMA should comment on potential impacts to the highway and underlying infrastructure assets.
- 4.20. The proposed redevelopment has the potential to result in an increased stress on the existing Network Rail tunnel. The tunnel is situated circa 20m to the south of the site and the crown of the tunnel is estimated to be at circa 14m bgl. The BIA states that the impact to the tunnel from the scheme will be negligible, and that Network Rail will be consulted, and approval sought, as the project progresses.
- 4.21. The London Clay has been identified to be susceptible to shrink/swell subsidence. The BIA mentioned that the proposed basement foundations will extend below the depth of susceptibility. In addition, as no trees are proposed to be removed, no impact on neighbouring foundations is anticipated.

5.0 CONCLUSIONS

- 5.1. The qualifications of the individuals involved in the BIA are in accordance with LBC guidance.
- 5.2. Architectural drawings presented should be updated to be fully dimensioned.
- 5.3. Screening and scoping assessments are presented, supported by desk study information.
- 5.4. Factual site investigation records should be presented.
- 5.5. The BIA indicates that there will be no impact to the wider hydrogeological environment.
- 5.6. The geotechnical parameters proposed in the BIA should be adopted consistently in the structural calculations.
- 5.7. There will be no impacts to the wider hydrological environment.
- 5.8. The GMA should be reviewed in accordance with the comments presented in Section 4.
- 5.9. Queries and requests for information are summarised in Appendix 2. Until the clarifications requested are presented, the BIA does not meet the requirements of Camden Planning Guidance: Basements.

Appendix 1: Residents' Consultation Comment

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Audrey Mandella; Chair of Hampstead Hill Gardens Residents' Association	Hampstead Hill Gardens	09/01/2022	Potential damage to surrounding properties; the proposed basement work would take place in close proximity to 6, 8 and 10 Hampstead Hill Gardens.	Section 4
			Potential flooding risk; the site is in a known area of moderate surface water flood risk. Summer 2021, homes surrounding 8 Hampstead Hill Gardens experienced flooding in their or/and inside their properties.	Section 4
Alan Fowle representing the Residents of 8 Hampstead Hill Gardens	8 Hampstead Hill Gardens	07/01/2022	Damage to 8 Hampstead Hill Gardens building foundation and structure.	Section 4
			Foundations of adjacent properties assumed to be 1m bgl.	Section 4
The Heath & Hampstead Society	Redacted	07/01/2022	Ground Movements caused by the excavation.	Section 4
			Changes to groundwater flow.	Section 4
			The proposed basement borders Grade II listed building. The deep basement would threaten the structural stability of the listed building.	Section 4
Michael Carter	2a Hampstead Hill Gardens	08/01/2022	Impacts of basement redevelopment on drainage and flooding risk.	Section 4

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	Architectural drawings should be updated to report levels and dimensions.	Open – 4.5	
2	BIA	Factual SI information to be provided.	Open – 4.8	
3	Land Stability	The geotechnical parameters proposed in the BIA should be adopted consistently in the structural calculations.	Open – 4.12	
4	Land Stability	GMA should be reviewed and clarified, as required. Clarification on the number of underpinning stages to be presented.	Open – 4.13 to 4.19	

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

Unit 5.03,
HERE,
470 Bath Road,
Bristol BS4 3AP

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