

**28 Charlotte Street, London
W1T 2NF**

Basement Impact Assessment Audit

For
London Borough of Camden

Project No.
14006-01

Date
March 2023

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	21/03/2023	Draft	PWkb-14006-01- 210123-28 Charlotte Street-D1.docx	PW	KB	KB

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 2023

Document Details

Last Saved	21/03/2023 11:07
Author	P Wright, BSc MSc CGeol FGS
Project Partner	E M Brown, BSc MSc CGeol FGS
Project Number	14006-01
Project Name	28 Charlotte Street, London W1T 2NF
Revision	D1
Planning Reference	2022/4794/P
File Ref	PWkb-14006-01-210323-28 Charlotte Street-D1.docx

CONTENTS

1.0 NON-TECHNICAL SUMMARY 4

2.0 INTRODUCTION..... 6

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST 8

4.0 DISCUSSION 12

5.0 CONCLUSIONS..... 15

APPENDICES

Appendix 1: Consultation Responses 17

Appendix 2: Audit Query Tracker..... 18

Appendix 3: Supplementary Supporting Documents..... 20

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 28 Charlotte Street, London, W1T 2NF (planning reference 2022/4794/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 BIA has been prepared by Soils Ltd and the qualifications of the of the authors of the BIA are in accordance with LBC requirements.
- 1.5 The proposed basement will extend to the rear of the property, below the footprint of the existing building. It is proposed to construct the extension as a concrete box detached from the adjacent existing party walls. The basement will comprise a reinforced concrete raft supported on 300mm diameter concrete piles.
- 1.6 A screening and scoping assessment are presented, supported by desk study information.
- 1.7 Two ground investigations have been carried out, one by Chelmer Consultancy Services in 2016 and one by Soils Limited in 2020. The ground conditions comprise Made Ground to 5.20m depth over Lynch Hill Gravel, with London Clay below. Groundwater levels between 4.77m and 5.30m depth were recorded.
- 1.8 It is accepted that the surrounding slopes to the development site are stable.
- 1.9 It is accepted that the development will not impact on the wider hydrology of the area and is not in an area subject to flooding.
- 1.10 The Land stability screening should be amended and consideration given to the source of the deep Made Ground and the impact on the proposed development.
- 1.11 The foundation pit sketches are missing from Appendix C of the BIA should be provided. Clarification of the existing foundation depths is required.
- 1.12 A Proposed Construction Sequence is included in Appendix B of the Structural Methodology Statement. Further consideration of the temporary works requirements where excavation in granular soils extends below the founding depth of adjacent party walls is required.
- 1.13 The input and output data from the PDisp and Wallap analyses should be provided.
- 1.14 A Ground Movement Assessment has been undertaken indicating any movement will be within acceptable limits (Category 1 of the Burland Scale). However, further assessment is required.
- 1.15 Utility data should be provided and considered in the assessment.

- 1.16 Proposals are provided for a movement monitoring strategy during excavation and construction and baseline monitoring is recommended prior to construction. Trigger limits are detailed within the Structural Methodology Statement however these should be revised to reflect the results of the GMA.
- 1.17 It cannot be confirmed that the BIA complies with the requirements of CPG: Basements until the queries raised in Section 4 and Appendix 2 are addressed.

2.0 INTRODUCTION

2.1 CampbellReith was instructed by London Borough of Camden (LBC) on Date to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 28 Charlotte Street, London, W1T 2NF, reference 2022/4794/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.
- Camden Neighbourhood Plan - Fitzrovia East (designated area only).

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 *"Partial mansard roof to front to enclose sides of existing roof terrace; new skylight in main roof; replacement windows at roof level; excavation of basement below existing rear extension (studio); removal of wastepipes from front elevation; internal works at all levels"*.

2.6 The Audit Instruction confirmed 28 Charlotte Street is a Grade II listed building. The applicant's building shares a party wall with no. 26 Charlotte Street which is also a Grade II listed building. Additional listed buildings are located over 10m from the site on Colville Place to the northwest of the site.

2.7 CampbellReith accessed LBC's Planning Portal on 21st February 2023 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA) at 28 Charlotte Street, Camden, London, W1T, 40 Soils Ltd, Ref: 18860/BIA_R38, October 2022

- Structural Methodology Statement (SMS) for 28 Charlotte Street, Fitzrovia, London, W1T, Rodrigues Associates, Job no. 1964, October 2022
- Design Access Statement (DAS), Montagu Evans, 28CS(RP)A01, October 2022
- Planning and Heritage Statement, Montagu Evans, November 2022
- Archaeological Desk-Based Assessment, Land at 28 Charlotte Street, London, W1T 2NF, RPS Group, Project Code: JAC28023, April 2022
- Planning Application Drawings consisting of:
 - Site Location Plan Drawing no. 28CS(00)A00, 28/10/22
 - Existing Plans, Elevations and Sections 28CS(00)A01 to 28CS(00)A036, 28/10/22
 - Demolition Plans and sections 28CS(10)A01 to 28CS(10)A06, 28/10/22
 - Proposed Plans, Elevations and Sections 28CS(20)A01 to 28CS(20)A06, 28/10/22

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?	No	Utility data should be provided and considered in the BIA
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	No	Detailed within Appendix B of the Structural Methodology Statement (SMS). Additional information relating to excavations in granular material is required.
Are suitable plan/maps included?	Yes	Figures 1 to 28 of the BIA.
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?	No	Table 3.2 states the site is neither within, nor is in close proximity to, an area of worked ground. Figure 5 of the Arup GSD (pg 53 of BIA) shows a number of such areas near the site to the north. This should be revised.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Included in Section 2 of the BIA.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Included in Section 2 of the BIA.
Is a conceptual model presented?	Yes	Table 5.2 and Section 5.4 of the BIA.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	
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?	Yes	Sections 5 and 6 and Appendix C and D of the BIA. Foundation pit sketches are missing from the BIA and should be provided.
Is monitoring data presented?	Yes	Sections 5.4 of the BIA.
Is the ground investigation informed by a desk study?	Yes	Section 2 of the BIA.
Has a site walkover been undertaken?	Yes	Undertaken in 2020 during the site investigation works.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Section 2.5 of the BIA.
Is a geotechnical interpretation presented?	Yes	Section 8 of the BIA.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 11.3 and Table 11.2 of the BIA.
Are reports on other investigations required by screening and scoping presented?	Yes	

Item	Yes/No/NA	Comment
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	However foundations depths should be presented consistently.
Is an Impact Assessment provided?	Yes	Section 4.2 of the BIA, however consideration of the host building is required.
Are estimates of ground movement and structural impact presented?	No	Sections 11 and 12 of the BIA detail a Ground Movement Assessment relating to the impact on the adjacent properties. However, no information is provided regarding the services on or within the site that may be impacted by ground movement.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	Confirmation of the presence/absence of utilities that may be impacted is required.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	A Structural Methodology Statement and a Proposed Construction Sequence prepared by Rodrigues Associates is included in Appendix E of the BIA.
Has the need for monitoring during construction been considered?	Yes	However, proposed trigger limit values should be revised in line with the outcome of the Ground Movement Assessment
Have the residual (after mitigation) impacts been clearly identified?	Yes	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Utility data required. Foundation depths to be confirmed. Further information relating to temporary support of granular soils is required.

Item	Yes/No/NA	Comment
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	Section 10.4 of the BIA
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	Section 12.2 of the BIA. However further updates to the GMA are required.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

- 4.1 The Basement Impact Assessment (BIA) has been carried out by engineering consultants Soils Limited and the individuals concerned in its production have suitable qualifications.
- 4.2 The Structural Methodology Statement (SMS) has been prepared by Rodrigues Associates in Appendix E of the BIA and includes a proposed structural scheme and a proposed construction sequence.
- 4.3 The LBC Instruction to proceed with the audit identified that the applicant's building with the proposed basement extension is a Grade II listed building. The instruction also indicated that the adjacent building, No. 26, is also Grade II listed. The Design & Access Statement identified that the site is within Charlotte Street Conservation Area.
- 4.4 The site is within the Fitzrovia East Neighbourhood Area.
- 4.5 The existing property is a terraced building with four above ground storeys and a basement level. To the rear, a later extension is present, comprising a single storey, double height workshop. The proposed development comprises the extension of the existing basement level towards the rear of the property, below the single-storey extension area. The basement will be fully within the existing footprint of the property.
- 4.6 The new basement will be formed within the historic perimeter party walls and footings, which will remain in place.
- 4.7 Utility data has not been provided and is requested.
- 4.8 The BIA has identified that the proposed basement slab will be constructed on Made Ground and will be supported on piles that will extend into competent material. The Made Ground extends to a depth of 5.30m bgl and is anticipated to be underlain by 2.40m of the Lynch Hill Gravel Member which in turn is underlain by London Clay from 7.70m bgl.
- 4.9 The results of two ground investigations are presented and discussed in Sections 5 and 6 of the BIA. Two trial pits and one borehole were undertaken by Chelmer in 2016. Subsequently, two further trial pits were undertaken by Soils Ltd. in 2020.
- 4.10 Soils trial pit TP101 was undertaken in the north rear corner of the ground floor level extension. It identified a foundation depth of 4.05m bgl in one section and 3.50m bgl in the other section. The foundation sketches, which are stated to be included in Appendix C are not included within the document and should be provided to confirm which wall these observations apply to. Soils trial pit TP102 identified a foundation depth of 2.30m bgl at the existing rear wall of No. 28. No trial pits to expose the foundation of the southern party wall are presented.
- 4.11 The depth of the existing foundations of No. 26 to the south is indicated to be 2.40m below the floor level in section CC on drawing 28CS(20)A06 in Appendix E despite the depth of TP2 only reaching 2.10m bgl. Section AA on drawing 28CS(20)A05 indicates the foundation depth of the rear wall of No. 28 is "assumed". Clarification of the existing foundation depths is requested, including identification of areas where foundation depth is unknown.

- 4.12 The borehole undertaken during the Chelmer investigation recorded groundwater entry at 5.30m bgl. Two subsequent monitoring visits recorded the shallowest standing water level of 4.77m bgl.
- 4.13 The subterranean screening indicated that the site is underlain by the Lynch Hill Gravel Member, which is classified as a Secondary A aquifer. Based on the 2016 monitoring it is not anticipated that the basement will extend beneath the water table. It is noted that perched groundwater may be present. The BIA identifies that a rise in the water table cannot be ruled out and the high permeability of the founding material could pose a risk to the safety of the workers at the time of construction and of the occupants during the lifetime of the structure. The BIA indicates that an increase in the groundwater level may pose a risk to construction workers and end users and recommends that a dewatering strategy be designed by a specialist drainage engineer to allow construction to proceed. Appropriate waterproofing is recommended in the BIA.
- 4.14 The Land Stability screening indicates that the site is neither within, nor near to, an area of worked ground which is contradicted by Figure 5 of the Arup GSD (pg 53 of BIA), which shows a number of areas of Made/Worked Ground near the site to the north. The ground investigation identified Made Ground to a depth of 5.30m. Section 5 of the Design and Access Statement indicates that the proposed basement extension will reinstate an infilled historic basement which is assumed to have existed under the current rear extension of the building. However, the Made Ground encountered extends to a greater depth than would be typically expected for a basement dating from the time of the building's construction and subsequent alterations. It is requested that consideration be given to other potential reasons for Made Ground of this depth to be present at the site.
- 4.15 The proposed extension will be contained within the existing footprint of the building therefore there will be no impact on existing surface water flow or surface drainage.
- 4.16 It is not accepted that there are no slope stability concerns regarding the proposed development, and it is not in an area prone to flooding.
- 4.17 The history of seasonal shrink-swell is unknown and the occurrence is considered unlikely owing to the predominantly granular nature of the Made Ground and Lynch Hall Gravel Member. It is considered that some residual heave may occur within the London Clay following the excavation and unloading of the overlying soil.
- 4.18 The basement will be constructed to a maximum depth of 3.50m bgl, corresponding to approximately 0.90m below the existing basement formation level. The proposed basement structure will be independent of the existing foundations and supported by a piled slab. The piles will be installed at ground floor level and reduced down to basement level during excavation.
- 4.19 The SMS details the proposed construction sequence as follows:
1. Installation of monitoring positions and baseline survey.
 2. Removal of existing ground floor slab.

3. Install piles up to the existing floor level.
 4. Resin anchor wailing beams to party walls and install heavy duty props.
 5. Excavate to 1.50m bgl and cut down exposed piles and connect further wailing beams and heavy props.
 6. Excavate to formation level of no. 26 and cut down exposed piles.
 7. Excavate to formation level, blind formation level and cast basement slab.
 8. Cast side walls and insert well-compacted soil behind new walls.
- 4.20 The proposed construction will be undertaken using the existing perimeter foundations to support the excavation sides. Appendix B of the BIA provides a construction sequence including temporary propping locations to support these walls.
- 4.21 Stage 4 of the Proposed Construction Sequence (sections A-A and B-B) indicates the maximum depth of excavation will be deeper than the party wall foundation of No. 30 and the existing wall of No. 28. Given the ground conditions at this depth will comprise either granular Made Ground or the Lynch Hill Gravel Member, further clarification is required regarding the proposed temporary support for the adjacent foundations to ensure stability is maintained during excavation.
- 4.22 The adjoining property at No. 30 Charlotte Street is understood to have no basement and therefore a Ground Movement Assessment (GMA) was undertaken to consider the impact of the basement excavation on this structure. The results of the assessment indicate damage to the building will not exceed Burland Category 1 (Very Slight).
- 4.23 The assessment was undertaken using PDisp and Wallap. Full input and output data is required to confirm the soil parameters and model geometry used.
- 4.24 Figure 34 within the BIA, which shows the vertical deflection estimated as part of the Ground Movement Assessment is labelled "8 Hamstead Grove". It should be confirmed that the correct figure has been presented.
- 4.25 As the applicant building, No. 28, is Grade II listed and the depth of the foundation is shallower than the proposed basement excavation depth, the GMA should be updated to consider the impact the proposed basement will have on the rest of the host building.
- 4.26 The BIA identified that, as the extension will be undertaken to the rear of the property, ground movement impacts on the carriageway and pavement of Charlotte Street is not anticipated.
- 4.27 Proposals are provided for a movement monitoring strategy during excavation and construction and baseline monitoring is recommended prior to construction. Trigger limits are detailed within the Structural Methodology Statement however these should be revised to reflect the results of the GMA.

5.0 CONCLUSIONS

- 5.1 The BIA has been carried out using individuals who possess suitable qualifications.
- 5.2 The BIA has confirmed that the proposed basement will be founded within Made Ground and supported on a raft piled into competent material. Screening within the BIA states the site is not in an area of worked ground which is contradicted in the site investigations.
- 5.3 It is accepted that the development will not impact on the wider hydrology of the area and is not in an area subject to flooding.
- 5.4 It is stated in the Land Stability screening that no worked ground is present which contradicts the information sourced and the deep Made Ground encountered during the investigation. It is requested that consideration be given to other potential reasons for the presence of deep Made Ground and the impact on the proposed development.
- 5.5 It is likely that perched ground water or the groundwater table will be encountered during basement foundation excavation. The report indicates that an increase in the groundwater level may pose a risk to construction workers and end users and recommends a specialist drainage engineer is commissioned to design appropriate waterproofing and drainage measures.
- 5.6 The Structural Method Statement proposes the piled foundations be installed before the excavation of the basement extension. The excavation will be supported by wailing beams and temporary props. The piles will be cut down to the formation level and a slab constructed followed by cast in place construction of the walls. The new structure will be kept within the existing perimeter walls and the gap between the new and old walls infilled with compacted soil.
- 5.7 The foundation pit sketches missing from Appendix C of the BIA should be provided. The depths of the foundation shown on drawings 28CS(20)A05 and A06 should be confirmed. Currently the depth contradicts the findings of the site investigation.
- 5.8 A Ground Movement Assessment has been undertaken to assess the impact on No. 30, which is anticipated not to have a basement. The results of the assessment indicate damage to the building will not exceed Burland Category 1 (Very Slight).
- 5.9 The host building is listed Grade II and therefore the GMA should consider the impact to this building and ensure the construction of the proposed new basement will not impact the listed building.
- 5.10 Utility data should be provided and considered in the assessment.
- 5.11 The input and output data of the PDisp and Wallap analyses should be provided.
- 5.12 Further consideration of the temporary works requirements where excavation in granular made ground and lynch hill gravels is anticipated particularly below the founding depth of adjacent party walls.

- 5.13 Proposals are provided for a movement monitoring strategy during excavation and construction and baseline monitoring is recommended prior to construction. Trigger limits are detailed within the Structural Methodology Statement however these should be revised to reflect the results of the GMA.
- 5.14 It cannot be confirmed that the BIA complies with the requirements of CPG: Basements until the queries raised in Section 4 and Appendix 2 are addressed.

Appendix 1

Consultation Responses

None

28 Charlotte Street, London W1T 2NF
Basement Impact Assessment Audit

CampbellReith
consulting engineers

Appendix 2

Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Utility Data	Utility data is required. These should be included in the Ground Movement Assessment if an impact is identified.	Open	
2	Existing Foundations	Clarification of the existing foundation depths is requested, including identification of areas where foundation depth is unknown. Drawings should correlate with the findings of the ground investigation. Foundation pit sections should be provided.	Open	
3	Land Stability	The Land Stability screening should be updated to consider other potential reasons for 5.3m deep Made Ground to be present on site, considering the worked ground identified in the area and other desk study sources.	Open	
4	Land Stability	The Ground Movement Assessment must consider the impact the proposed development will have on no. 28 as it is a Grade II listed property.	Open	
5	Land Stability	Figure 34 is labelled "8 Hamstead Grove". Clarification required.	Open	
6	Land Stability	The full input and output data of the PDisp and Wallap analyses should be included for review.	Open	
7	Land Stability	Further detail is required regarding how excavations in granular soils will be supported, particularly where excavation extend below the base of adjacent foundations.	Open	
8	Land Stability	Movement monitoring trigger limits detailed within the Structural Methodology Statement should be revised to reflect the results of the GMA.	Open	

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

Bristol

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

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

Manchester

No. 1 Marsden Street
Manchester
M2 1HW

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