

**Basement Impact  
Assessment Audit**

21 Baldwin's Gardens, London  
EC1N 7UY

For  
London Borough of Camden

Project No.  
14006-24

Date  
December 2023

Campbell Reith Hill LLP  
15 Bermondsey Square  
London  
SE1 3UN

T: +44 (0)20 7340 1700  
E: [london@campbellreith.com](mailto:london@campbellreith.com)  
W: [www.campbellreith.com](http://www.campbellreith.com)

## DOCUMENT HISTORY AND STATUS

Revision	Date	Purpose/ Status	File Ref	Author	Check	Review
D1	08/12/2023	For comment	SSemb14006-24- 231218- 21 Baldwins Gardens-D1	SS	NS	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 2023

### Document Details

Last Saved	18/12/2023 14:19
Author	Sam Savery, BSc MSc CGeol FGS
Project Partner	E M Brown, BSc MSc CGeol FGS
Project Number	14006-24
Project Name	Basement Impact Assessment Audit
Revision	D1
Planning Reference	2020/5897/P
File Ref	SSemb14006-24-231218- 21 Baldwins Gardens-D1.docx

## CONTENTS

1.0	NON-TECHNICAL SUMMARY .....	4
2.0	INTRODUCTION.....	5
3.0	BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST .....	7
4.0	DISCUSSION .....	11

## APPENDICES

Appendix 1: Consultation Responses

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 21 Baldwin's Gardens, London EC1N 7UY (planning reference 2020/5897/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 proposal comprises the deepening of an existing basement and its extension beneath a new five-storey rear extension.
- 1.5 Evidence of the BIA authors qualifications provided does not meet the requirements of Camden Planning Guidance for basements.
- 1.6 The BIA has confirmed that the proposed basement will be founded within River Terrace Deposits using an underpinning construction method to support the existing perimeter walls.
- 1.7 Land stability screening should be amended to consider differential depth to neighbouring properties and nearby underground third party asset.
- 1.8 Mitigation measures are required for any groundwater inflow during construction.
- 1.9 Outline structural information should be provided as per Camden guidance on the scope of engineering services in preparing BIAs.
- 1.10 Additional information is required to confirm the bearing capacity and geotechnical design parameters.
- 1.11 A Ground Movement Assessment (GMA) has been undertaken that concludes damage can be limited to the values set in the Camden Planning Guidance for basements. However additional information is required to support that conclusion.
- 1.12 The BIA recommends structural movement monitoring strategy is implemented during excavation and construction.
- 1.13 It is accepted there is no significant risk of surface water impacts.
- 1.14 It is accepted that the surrounding slopes to the development site are stable.
- 1.15 It is accepted that the development will not impact on the local and wider hydrogeology of the area.
- 1.16 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 24<sup>th</sup> July 2023 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 21 Baldwin's Gardens London EC1N 7UY, planning reference 2020/5897/P. Information required to complete the BIA was uploaded to the website on 6<sup>th</sup> November 2023.

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 "Enlargement of existing basement, erection of a single storey mansard roof extension, four storey rear extension, and change of use of existing commercial floor space to create 4 flats and a basement level jewellery workshop."

2.6 The Audit Instruction confirmed 21 Baldwins' Gardens is not listed, and is not a neighbour to listed buildings. It is in an archaeological priority area Tier II.

2.7 CampbellReith accessed LBC's Planning Portal on 28<sup>th</sup> July 2023 and 21<sup>st</sup> November 2023 to gain access to the following relevant documents for audit purposes:

- Hydrogeological and hydrological aspects of Basement Impact Assessment (BIA), by H Fraser Consulting Ltd, ref. 307742, rev R1, dated 12<sup>th</sup> July 2023.
- Land Stability Report for Basement Impact Assessment by RSA Geotechnics Ltd, ref 16336SI, revision unknown, dated November 2023.

- Existing Basement Plan by David Lees Architects, ref 2009, rev P2, dated December 2020.
- Existing Rear Elevation by David Lees Architects, ref 2009, rev P1, dated December 2020.
- Proposed Basement Plan by David Lees Architects, ref 2009, rev P5, dated December 2020.
- Proposed Section AA by David Lees Architects, ref 2009, rev P4, dated December 2020.
- Proposed Section BB by David Lees Architects, ref 2009, rev P3, dated December 2020.
- Thames Water Consultation Response via email, ref 68723, dated 16<sup>th</sup> February 2021.

### 3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	Qualifications for the hydrology and land stability impact assessment are not in line with the CPG for Basements
Is data required by Cl.233 of the GSD presented?	No	Limited structural information i.e. loadings
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	H Fraser and RSA BIA report appendices
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	The presence of Thames Water assets has not been acknowledged. Question 13 and 14 should be answered as 'Yes' and brought forward to scoping
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	H Fraser BIA Section 3.1
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	H Fraser BIA Section 3.2
Is a conceptual model presented?	Yes	RSA BIA Section 8.1

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	However, Question 13 and 14 should be brought forward to scoping
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	H Fraser BIA Section 4
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	H Fraser BIA Section 4
Is factual ground investigation data provided?	Yes	RSA BIA Appendix
Is monitoring data presented?	Yes	Single visit 28 <sup>th</sup> September 2023
Is the ground investigation informed by a desk study?	Yes	H Fraser BIA Section 2 and RSA BIA Section 3
Has a site walkover been undertaken?	Yes	RSA BIA Section 6
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	RSA BIA Section 4.1 Q13
Is a geotechnical interpretation presented?	Yes	From limited SI information
Does the geotechnical interpretation include information on retaining wall design?	Yes	RSA BIA Section 7.1
Are reports on other investigations required by screening and scoping presented?	Yes	
Are the baseline conditions described, based on the GSD?	Yes	



Item	Yes/No/NA	Comment
Do the base line conditions consider adjacent or nearby basements?	Yes	RSA BIA Section 4.1 Q13
Is an Impact Assessment provided?	Yes	RSA BIA Section 7.3
Are estimates of ground movement and structural impact presented?	Yes	H Fraser BIA Section 5 RSA BIA Section 7.3. However further clarification is required
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	Further clarification is required on the ground movement assessment
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	Mitigation measures against groundwater inflow into excavation are required
Has the need for monitoring during construction been considered?	Yes	RSA BIA Section 7.4
Have the residual (after mitigation) impacts been clearly identified?	Yes	To be confirmed within the GMA
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Additional information is required to justify GMA conclusions
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	As above

Item	Yes/No/NA	Comment
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	RSA BIA Section 7.3. However further information is required to support this statement
Are non-technical summaries provided?	Yes	Executive summaries

## 4.0 DISCUSSION

- 4.1 The Basement Impact Assessment (BIA) has been carried out by two engineering consultancies. The Hydrogeology and Hydrology aspects have been undertaken by H Fraser Consulting and the Land Stability aspects have been undertaken by RSA Geotechnics. The individuals concerned in the production of the BIA do not have the qualifications required by CPG: Basements for hydrology and land stability assessment, however, it is accepted that the hydrology assessment has been undertaken appropriately.
- 4.2 The existing 21 Baldwin's Gardens site comprises a four-storey terraced building with a partial basement at the front. The building is of mixed use as a commercial premises on the ground floor and residential in the upper levels. The terrace generally comprises three- to four-storey buildings of similar age and construction. However, the RSA BIA report states there are no records of neighbouring basements. In the absence of hydrogeological impacts (see below) this is accepted as being conservative.
- 4.3 The proposed development involves extending the first, second and third floors towards the rear (above the existing ground floor), adding a fourth floor (fifth storey) and extending the basement approximately 6.30m towards the rear beneath the new extension. The existing basement will be also deepened to c. 0.40m below current basement slab level to accommodate a thicker floor slab construction. The proposed basement construction method comprises conventional underpinning.
- 4.4 Question 13 and 14 of the land stability screening should be brought forward to scoping as there is a significant increase in differential foundation depth between the proposed basement and neighbouring properties; and the site maybe within the exclusion zone of third party underground assets.
- 4.5 The BIA has been informed by a desk study and a site-specific ground investigation. The ground investigation comprised two window sample boreholes using lightweight handheld equipment due to site access restrictions. The exploratory holes were undertaken from existing basement level (17.30m AOD) to a maximum depth of 1.30m (16.00m AOD). Four foundation exposure pits have been undertaken around the existing perimeter walls. The existing brickwork foundations were encountered at approximately 0.50m below the basement floor at about 16.90m AOD, approximately 2.60m below the external ground level on Leather Lane.
- 4.6 The ground conditions encountered comprise Made Ground to levels of between 17.10m and 16.50m AOD overlying River Terrace Deposits to the lowest level of investigation (16.00m AOD). No in-situ and/or strength tests have been undertaken.
- 4.7 The Fraser Consulting Ltd report includes two historical borehole records approximately 115m west and 50m northeast distance from site. These historical BGS logs have been used to infer the ground conditions at depth for the land stability assessment by RSA Geotechnics. The BIA states the London Clay Formation is present at approximately 7m depth below the external ground level (19.50m AOD) corresponding with the historical BGS logs. Groundwater records on the historical logs are unclear.

- 4.8 A standpipe was installed to the base of WS1A (1.30m depth). Groundwater was not encountered during the investigation or during the single subsequent monitoring visit.
- 4.9 The screening assessment identifies the River Terrace Deposits mapped at site are classified as a 'Secondary A' aquifer. H Fraser Consulting Ltd state groundwater is likely present within the River Terrace Deposit gravels, but at depths where the basement will not interfere with local groundwater flow. The RSA land stability report confirms groundwater will not be encountered during basement construction and dewatering will not be required. It is accepted there will not be a significant impact on the wider hydrogeological environment. However, considering the available site investigation information and the hydrogeology of the site, ingress of groundwater into the basement excavation cannot be discounted and proposals to deal with groundwater during construction should be presented in the BIA.
- 4.10 The site is classed as being at very low risk of surface water flooding or river flooding. The BIA confirms the hard surface/paved areas will not change as part of the development therefore rainfall and run-off discharge will remain unchanged from the existing. The surface water drainage and foul water will utilise the existing main drainage system. There BIA states there is no significant risk of surface water impacts.
- 4.11 The proposed basement perimeter walls are to be underpinned to 15.90m AOD. The underpinning sequence for basement construction is included as RP Design drawing number 2198-8, presented in the RSA Geotechnics report. This includes a traditional underpinning technique with 1.00m maximum width. Temporary propping is required for lateral support. Preliminary structural loads and supporting outline calculations for the retaining wall are not presented and are required as per the Guidance on the scope of engineering services in preparing BIAs by LBC.
- 4.12 The RSA BIA states there will be an increase in bearing capacity provided by the slightly deeper underpins and that this will provide adequate support for the new four storey extension. However, this is not supported by any quantitative site investigation data and requires clarification. The BIA should provide a geotechnical interpretation to be used in the structural outline calculations for foundations and retaining walls. The geotechnical parameters assumed for the Made Ground are not considered a cautious estimate, however, due to its limited extent, this does not alter the conclusions of the impact assessment.
- 4.13 A preliminary Ground Movement Assessment (GMA) has been undertaken by RSA Geotechnics concluding a maximum surface settlement of 1.2mm to 3.2mm. The GMA suggests that damage to neighbouring structures can be limited to Burland Scale of Damage Category 1 (very slight). However, the predicted ground movements are unrealistically low and do not consider horizontal movement. Further information is required to support this conclusion as indicated below:
- A plan showing the geometry of the basement in relation to neighbouring properties clearly indicating any structural walls that are considered to be within the zone of influence of the basement and assumptions on neighbouring foundation depths should be presented;

- The method of determining ground movements and the assumptions made should be provided together with input parameters;
- Assumptions on depth of underpinning and depth of excavations should be clearly stated in the GMA;
- Category of damage in accordance with the Burland Scale should be determined and presented for each neighbouring wall analysed;
- As the proposed basement is within 5m of a highway, an assessment on the assets should be included in the GMA.

4.14 The BIA recommends a movement monitoring strategy during excavation and construction is implemented to ensure structural movements remain within acceptable limits. Trigger limits have not been provided and should be agreed as part of the party wall award negotiations.

4.15 As indicated in paragraph 4.4 there are Thames Water assets in the vicinity of the proposed development. Potential impacts on utilities including Thames Water assets have not been acknowledged in the BIA which should confirm that liaison with the asset owner is ongoing.

## 5.0 CONCLUSIONS

- 5.1 The Basement Impact Assessment (BIA) has been carried out by engineering consultants H Fraser Consulting Ltd and RSA Geotechnics Ltd. Individuals involved in their production do not have suitable qualifications for land stability assessment.
- 5.2 Some of the questions of the land stability screening are answered incorrectly and should be brought forward to scoping.
- 5.3 The BIA has confirmed that the proposed basement will be founded within River Terrace Deposits.
- 5.4 Although groundwater was not encountered or monitored as part of the site investigation proposals to deal with groundwater ingress into the excavation are required.
- 5.5 Outline structural information should be provided as per the Camden guidance on the scope of engineering services.
- 5.6 Clarification is required to confirm the allowable bearing capacity and geotechnical parameters for retaining wall design.
- 5.7 The BIA includes a GMA stating damage can be limited the Burland Category 1 (very slight). However no information is provided to support this statement. Additional information required as detailed in Section 4.
- 5.8 It is accepted there will be no significant impact to the surface water drainage.
- 5.9 It is accepted that the surrounding slopes to the development site are stable.
- 5.10 It is accepted that the development will not impact on the local and wider hydrogeology of the area.
- 5.11 Confirmation that liaison with Thames Water is ongoing should be provided regarding the potential impact to the nearby asset.
- 5.12 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

Basement Impact Assessment Audit  
21 Baldwin's Gardens, London EC1N 7UY

CampbellReith  
consulting engineers

## **Appendix 2**

### **Audit Query Tracker**



Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA format	The BIA for land stability should be authored/reviewed by individuals holding qualifications required by the CPG for basements	Open – See paragraph 4.1	
2	BIA format	Questions 13 and 14 of the land stability screening should be brought forward to scoping	Open – See paragraph 4.4	
3	Hydrogeology	Proposals to deal with groundwater during construction should be presented in the BIA	Open – See paragraph 4.9	
4	Land stability	Bearing capacity assumptions and parameters for retaining wall design require justification	Open – See paragraph 4.6	
5	Land stability	Preliminary structural loads and outline retaining wall calculation to be presented	Open – See paragraph 4.11	
6	Land stability	Further information on the GMA is required as detailed in Section 4	Open – See paragraph 4.13	
7	BIA format	Confirmation that liaison with nearby asset owner is ongoing should be presented in the BIA	Open – See paragraph 4.15	

## **Appendix 3**

### **Supplementary Supporting Documents**

---

## London

15 Bermondsey Square  
London  
SE1 3UN

T: +44 (0)20 7340 1700  
E: [london@campbellreith.com](mailto:london@campbellreith.com)

## Birmingham

Chantry House  
High Street, Coleshill  
Birmingham B46 3BP

T: +44 (0)1675 467 484  
E: [birmingham@campbellreith.com](mailto:birmingham@campbellreith.com)

## Bristol

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

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

## Manchester

No. 1 Marsden Street  
Manchester  
M2 1HW

T: +44 (0)161 819 3060  
E: [manchester@campbellreith.com](mailto: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