CampbellReith
consulting engineers

Basement Impact Assessment Audit

24 Burgess Hill, London, NW2 2DA

For
London Borough of Camden

Project No.
14291-13

Date
May 2025

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	06/02/2025	For comment	RAgk14291-13-060225-24 Burgess Hill_D1	RA	GK	GK
F1	13/05/2025	Final	RMgk14291-13-130525-24 Burgess Hill_F1	RM	GK	GK

Document Details

Last Saved	13/05/2025 08:19
Author	R A McCready, MSci, MSc, FGS
Project Partner	E M Brown, BSc MSc CGeol FGS
Project Number	14291-13
Project Name	Basement Impact Assessment Audit
Revision	F1
Planning Reference	2024/3069/P
File Ref	RMgk14291-13-130525-24 Burgess Hill_F1.docx

CONTENTS

APPENDICES

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 24 Burgess Hill, London, NW2 2DA (planning reference 2024/3069/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 carried out by Jomas Associates Ltd using individuals who possess suitable qualifications.

1.5 The proposed development involves the deepening and extending of the existing basement with lightwells at the front and rear.

1.6 The basement construction will involve two phases of underpinning: the first being along the foundations of the existing basement followed by underpinning the foundations beyond the existing basement footprint.

1.7 The BIA indicates that the proposed basement will be founded within London Clay.

1.8 It is unlikely that significant ingress of groundwater will be encountered during the basement foundation excavation.

1.9 It is accepted, considering the mitigation measures proposed, that the basement will not adversely impact the hydrology or hydrogeology of the local or wider environment.

1.10 Additional ground investigation encountered Made Ground from 1.00m to 2.00m thick at the rear of the property.

1.11 Additional information has been provided to confirm the proposed underpinning methodology.

1.12 Geotechnical parameters and outlined retaining wall design calculations have been provided.

1.13 A ground movement assessment has been undertaken and indicates a maximum Burland category of 1 (Very Slight) can be achieved.

1.14 Recommendations for monitoring during construction along with proposed trigger values have been provided.

1.15 It is confirmed that the BIA complies with the requirements of CPG: Basements and the Principles for Audit set out in the Basement Impact Assessment (BIA) Audit Service Terms of Reference & Audit Process.

2.0 INTRODUCTION

2.1 CampbellReith was instructed by London Borough of Camden (LBC) on 9th January 2025 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 24 Burgess Hill, London, NW2 2DA (ref. 2024/3069/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.
- Fortune Green and Hampstead Neighbourhood plan

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 "Proposed basement under existing footprint of building with associated lightwells to front and rear. Replacement rear extension and small side infill extension at ground floor and a first-floor side extension. Alterations to fenestration and front porch."

2.6 The Audit Instruction confirmed 24 Burgess Hill, London, NW2 2DA does not involve, nor is neighbour to, listed buildings.

2.7 CampbellReith accessed LBC's Planning Portal on 27th January 2025 and gained access to the following relevant documents for audit purposes:

- Stage 1 & 2 Basement Impact Assessment produced by Jomas Associates Ltd, dated June 2024, ref. P5943J3029/RAY.
- Ground Investigation & Basement Impact Assessment Report produced by Jomas Associates Ltd, dated September 2024, ref. P5943J3029/RAY.

- Ground Movement Assessment Report P5943J3029/RAY produced by Jomas Associates Ltd, dated November 2024, ref. P5943J3029/JRO.
- Flood Risk Assessment and SuDs Strategy produced by Jomas Associates Ltd, dated September 2024, ref. P5943J3029, rev. V1.0.
- Method Statement produced by Vereve Concepts Ltd, dated December 2024, unreferenced.
- Design & Access Statement produced by Arc8 Projects Ltd., dated July 2024, ref. 24 Burgess Hill, London NW2 2DA, rev. A.
- Construction Methodology and Engineering Statements produced by White & Lloyd Consulting Engineers, undated and unreferenced.
- Structural calculations produced by White & Lloyd Consulting Engineers, undated and unreferenced.
- Structural drawings calculations produced by White & Lloyd including:
  - Basement Plan, dated May 2024, ref. 24-CE-070 010 P1
  - Foundation Plan, dated May 2024, ref. 24-CE-070 011 P1
  - Basement construction sequence, dated May 2024, ref. 24-CE-070 015 P1
- Drawings produced by Verve Concepts Ltd include:
  - 12 proposed LGF plan, dated July 2024, ref. 1033 12, rev. G
  - 13 proposed GF plan, dated May 2024, ref. 1033 13, rev. K
  - 14 proposed FF plan, dated July 2024, ref. 1033 14, rev. F
  - 15 proposed FF plan, dated July 2024, ref. 1033 15, rev. E
  - 17 proposed front elevation, dated July 2024, ref. 1033 17, rev. F
  - 19 proposed front elevation, dated May 2024, ref. 1033 19, rev. A
  - 20 proposed front elevation, dated May 2024, ref. 1033 20, rev. A
  - 21 proposed forecourt plan, dated July 2024, ref. 1033 20, rev. B
- Drawing of the existing conditions 'Measured Building Survey' produced by EMP Chartered Surveyors, dated April 2023, ref. SH/3647, rev. A.
- Planning Consultation Responses.

2.8 The following updated information was provided for review between the 5th March and 24th April 2025 following issue of the D1 audit:

- Ground Investigation & Basement Impact Assessment Report produced by Jomas Associates Ltd, dated April 2025, ref. P5943J3029/RAY, rev. 2.0.
- Ground Movement Assessment produced by Jomas Associates Ltd, dated April 2025, ref. P5943J3029/JRO, rev. 2.0.

- Drawing produced by Verve Concepts Ltd, Proposed Front Elevation, dated February 2025, reference 1033 17, rev. H.

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	Additional ground investigation at rear of property undertaken.
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	
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	Additional ground investigation at rear of property undertaken.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Stage 1 & 2 BIA report
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Stage 1 & 2 BIA report
Is a conceptual model presented?	Yes	Ground Investigation & BIA report
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Stage 1 & 2 BIA report

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Stage 1 & 2 BIA report
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Stage 1 & 2 BIA report
Is factual ground investigation data provided?	Yes	Ground Investigation & BIA report.
Is monitoring data presented?	Yes	Ground Investigation & BIA report
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	No	However, neighbouring foundations assumed to be at ground level for the GMA.
Is a geotechnical interpretation presented?	Yes	Ground Investigation & BIA report
Does the geotechnical interpretation include information on retaining wall design?	Yes	Ground Investigation & BIA report
Are reports on other investigations required by screening and scoping presented?	Yes	FRA and SuDs strategy report provided
Are the baseline conditions described, based on the GSD?	Yes	Additional ground investigation at rear of property undertaken.
Do the baseline conditions consider adjacent or nearby basements?	No	Neighbouring buildings assumed to be founded at ground level
Is an Impact Assessment provided?	Yes	

Item	Yes/No/NA	Comment
Are estimates of ground movement and structural impact presented?	Yes	
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	
Has the need for monitoring during construction been considered?	Yes	
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?	Yes	
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?	Yes	
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	
Are non-technical summaries provided?	Yes	Provided as executive summaries.

4.0 DISCUSSION

4.1 The Basement Impact Assessment (BIA) has been carried out by engineering consultants Jomas Associates Ltd and the individuals concerned in its production have suitable qualifications.

4.2 The LBC Instruction to proceed with the audit identified that 24 Burgess Hill and the surrounding properties are not listed buildings.

4.3 The proposed development involves deepening and extending the existing basement of the property. The proposed basement consists of a single storey construction beneath the existing footprint of the property with lightwells to the front and rear. Small extensions to the ground and first floors are also proposed. Additional information provided includes a scaled drawing of the proposed basement confirming the full extent of the basement floor slab to be 3.35m below existing ground floor level.

4.4 The full Basement Impact Assessment has been undertaken in several stages and is presented across three main reports. The initial report, Stage 1 & 2 BIA, provides review of the desktop study information along with the screening and scoping tables. At this stage of the assessment no ground investigation information was available, and the desktop study information indicated the site to be directly underlain by the London Clay Formation.

4.5 The screening responses for subterranean flow confirmed the following:

- The site is underlain by London Clay which is an unproductive aquifer.
- It was not known if the proposed development would extend below the water table.
- The site is not within 100m of a watercourse or spring line.
- The basement will not result in an increased proportion of hardstanding.

4.6 The screening responses for land stability confirmed the following:

- The area surrounding the development is not sloped or in proximity to a railway cutting. However, planning consultation responses suggest that the ground naturally slopes to the west and the back gardens have been partially 'built up'. Additional ground investigation has been undertaken to confirm the depth of Made Ground at the rear.
- The site is underlain by London Clay and it is unknown if there is a history of shrink swell subsidence in the local area.
- No trees will be felled, and the site is not in an area of previously worked ground.
- The proposed basement is not within 5m of a pedestrian 'right of way' or highway.
- It is not known if the basement will significantly increase the differential depth of foundations relative to the neighbouring properties.

4.7 The screening responses for surface flow confirmed the following:

- The proposed development will not alter the existing site drainage or surface water flows.

- The basement will not create a change in the proportion of hardstanding.
- The site is not within an area identified to be at risk of surface water flooding.

4.8 The screening responses confirmed that the site is not within an area identified to be at risk of flooding and will not change the proportion of hardstanding. This was also confirmed within the Flood Risk Assessment & SuDs Strategy. It is therefore accepted that the proposed development will not adversely impact the hydrology of the local or wider environment.

4.9 It is noted that the provided site location plans suggest that a foul water drain runs through the rear garden/boundary. The updated GMA has included further comment on this as discussed below.

4.10 The scoping recommended a ground investigation be carried out to confirm the ground conditions and groundwater levels. Findings from the subsequent ground investigation are presented in a separate report. The investigation indicates that the ground to the front of the property comprises a thin cover of Made Ground directly over London Clay. Testing confirmed the clay is of medium volume change potential and thus the foundations should be designed accordingly. Additional ground investigation was carried out across the rear of the property and confirmed Made Ground is present to depths between 1.00m and 2.00m bgl.

4.11 Groundwater was not encountered during the drilling of the boreholes. Return monitoring visits reported groundwater at depths of 3.07m and 3.24m bgl. The report suggests that this is likely to be perched water (rather than natural groundwater) and, as London Clay is classified as an unproductive aquifer, no significant quantity of groundwater is anticipated to be encountered during construction. The Ground Investigation & BIA report concludes that any water encountered during the site works can be suitably mitigated using sump pumps.

4.12 It is accepted that the proposed development will not adversely impact the hydrogeology of the local or wider environment.

4.13 The scoping responses within the BIA recommended a ground movement assessment (GMA) be undertaken to establish the impacts to the neighbouring properties. This assessment is provided in a separate report.

4.14 The Method Statement document, produced by Verve Concepts Ltd, outlines that the construction of the proposed basement will comprise two phases of underpinning. The first phase includes underpinning the foundations of the existing basement. The second phase involves underpinning the foundations of the external walls (beyond the footprint of the existing basement). A drawing is provided showing the layout of the underpins. The Construction Methodology & Engineering Statement report, produced by White & Lloyd Consulting Engineers, states no bays within 4.00m to each other will be undertaken at the same time.

4.15 Additional information has been provided to show that the proposed area of excavation is limited to the footprint of the proposed basement and does not extend beyond this.

4.16 Geotechnical parameters are provided within the Ground Investigation & BIA report and are accepted to be suitable for the anticipated ground conditions.

4.17 Outline retaining wall calculations have been provided. The parameters applied to the soils are accepted to be suitable for the anticipated ground conditions.

4.18 The GMA has been carried out using the Oasys software packages P-Disp and X-Disp applying the movement curves provided in CIRIA C760 for the installation of planar diaphragm walls and excavation in front of a high stiffness wall in stiff clay. The GMA report acknowledges that although not strictly compatible with the construction methodologies adopted in underpinning works, the ground movement mechanisms are reasonably well matched and in lieu of better empirical relationships provide a satisfactory and conservative approximation.[RA1][GK2]

4.19 The GMA assumes a maximum excavation to 3.00m bgl with underpins 1.50m wide. The report also provides a summary of the proposed loads to the underpins. The input tables provided show the foundations of the neighbouring buildings have been assumed to be at ground level.

4.20 Two scenarios have been considered 1.) Installation of the underpins and loading of foundations in short term conditions and 2.) Installation of the underpin wall, loading of foundations and excavation of basement in the long-term conditions.

4.21 The findings of the modelling indicate maximum vertical and horizontal movements of 9mm and 2mm in the short-term conditions increasing to 18mm and 8mm in the long-term conditions. However, it is noted from the figures provided that the maximum settlement is predicted within the re-entrant corners, with significantly less settlement along the external walls nearest to the neighbouring properties. The GMA states that 5mm of horizontal movement and 5 to 10mm of vertical movement is typically anticipated per lift of underpinning.

4.22 The assessments provided indicate a maximum Burland damage category of Category 1 (very slight) can be achieved.

4.23 The updated BIA includes comment that other sensitive features (e.g. the foul water sewer and neighbouring swimming pool) are at sufficient distance from the proposed basement that negligible impact is anticipated.

4.24 The GMA report includes recommendations that a project specific monitoring regime and Action Plan is implemented during the construction of the proposed basement. The Construction Method and Engineering Statement provides proposed trigger values for the monitoring.

5.0 CONCLUSIONS

5.1 The BIA has been carried out by Jomas Associates Ltd using individuals who possess suitable qualifications.

5.2 The proposed development involves deepening and extending the existing basement with lightwells at the front and rear.

5.3 The basement construction will involve two phases of underpinning: the first being along the foundations of the existing basement followed by underpinning the foundations beyond the existing basement footprint.

5.4 The BIA indicates that the proposed basement will be founded within London Clay.

5.5 It is unlikely that significant ingress of groundwater will be encountered during the basement foundation excavation.

5.6 It is accepted, considering the mitigation measures proposed, that the basement will not adversely impact the hydrology or hydrogeology of the local or wider environment.

5.7 Additional ground investigation confirms Made Ground at the rear of between 1.00m and 2.00m thick.

5.8 Additional information confirms the proposed excavation of the basement is limited to the footprint of the host property and has been included in the GMA.

5.9 Geotechnical parameters and outline retaining wall design calculations have been provided.

5.10 A ground movement assessment has been undertaken and indicates a maximum Burland category of 1 (Very Slight).

5.11 Recommendations for monitoring during construction along with proposed trigger values have been provided.

5.12 It is confirmed that the BIA complies with the requirements of CPG: Basements and the Principles for Audit set out in the Basement Impact Assessment (BIA) Audit Service Terms of Reference & Audit Process.

CampbellReith
consulting engineers

Appendix 1

Consultation Responses

CampbellReith consulting engineers

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Shaw	Burgess Hill	26/08/2024	Evidence of subsidence in the local area.	Screening and scoping responses provided are sufficient to show negligible impact.
			Sloped and made-up ground in proximity to the site.	Additional ground investigation has been undertaken at the rear of the property.
			A ground movement assessment has not been carried out.	GMA provided in separate report and has been audited.
			Consideration of sensitive assets i.e. neighbouring swimming pool, have not been included in the assessment.	GMA has been updated to provide further comment.
			Water flow assessment does not consider sloping ground.	Screening and scoping responses provided are sufficient to show negligible impact.
Reidy	Burgess Hill	26/08/2024	Evidence of subsidence in the local area.	Screening and scoping responses provided are sufficient to show negligible impact.
			Sloped and made-up ground in proximity to the site.	Additional ground investigation has been undertaken at the rear of the property.
			Consideration of sensitive assets i.e. garden retaining walls	GMA has been updated to provide further comment.
			Impact to groundwater flow	The BIA confirms the site is underlain by London Clay that is classified as an unproductive aquifer.
			The proposed methodology is not suitable for the development.	Additional information provided to confirm excavation is limited to the basement footprint and has been considered within the GMA.
			The proposed basement layout is in proximity to neighbouring properties.	A GMA has been undertaken to assess the potential impact to neighbouring foundations.

CampbellReith
consulting engineers

Appendix 2

Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Land stability / construction methodology	Confirm the depth/level of excavation required for the proposed basement development. Provide a clear plan of the proposed areas and depths of excavation for the basement construction.	Closed – Section 4.3 & 4.15	April 2025
2	Land stability	Provide comment on the subsidence of the surrounding area following consultation responses from neighbours. Provide additional site investigation to confirm depth of Made Ground at the rear.	Closed – Section 4.6	May 2025
3	Ground Movement Assessment	Confirm assessment once other queries have been addressed and ground conditions confirmed. Include consideration to the impacts of other assets in proximity to the proposed basement.	Closed – Section 4.22	May 2025

CampbellReith
consulting engineers

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

10 Chapel Walks
Manchester
M2 1HL

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