CampbellReith
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Basement Impact Assessment Audit

24 Burgess Hill, London, NW2 2DA

For
London Borough of Camden

Project No.
14291-13

Date
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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 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. Confirmation of the ground conditions at the rear of the property are required.

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 Clarification of the depth of Made Ground at the rear and subsidence of the surrounding area is requested, noting the consultation responses.

1.11 Further details are requested on the proposed construction 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). However, impacts to other assets in proximity to the proposed basement development are requested.

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

1.15 As described in Section 5, it cannot be 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. Queries and comments on the BIA are described in Section 4 and Appendix 2.

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 involved, or 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 produce 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 produce 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

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	Further clarification required: rear ground conditions; presence of neighbouring structures; presence of utilities; the proposed methodology; full depth of excavation.
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?	No	Further comment on the depth of Made Ground at the rear and subsidence of the surrounding area is requested.
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; further details for ground conditions at the rear requested
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?	No	Further details for ground conditions at the rear required
Do the baseline conditions consider adjacent or nearby basements?	No	
Is an Impact Assessment provided?	Yes	

Item	Yes/No/NA	Comment
Are estimates of ground movement and structural impact presented?	Yes	GMA provided, however clarifications as set out in Section 4.0 required.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	However, clarifications of the assessment are requested.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	Clarifications requested, as Section 4
Has the need for monitoring during construction been considered?	Yes	
Have the residual (after mitigation) impacts been clearly identified?	No	Clarifications requested, as Section 4
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Further clarification on the construction methodology and GMA are required.
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	This should be confirmed once comments from Section 4.0 have been addressed.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	However, this should be confirmed once comments from Section 4.0 have been addressed.
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. The Ground Movement Assessment (GMA) and structural drawings indicate that the basement will extend 3.00m below the current ground floor level. However, the Ground Investigation & BIA report indicates excavations may extend between 3.50m to 4.00m bgl. Clarification is required and it is recommended that a drawing (confirming the proposed level of excavation) is provided.

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 indicates the site is directly underlain by the London Clay Formation.

4.5 The screening responses for subterranean flow confirm the following:

- The site is underlain by London Clay which is an unproductive aquifer.
- It is not known if the proposed development will 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 confirm 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'. Further comment on the depth of Made Ground at the rear is requested.
- The site is underlain by London Clay and it is unknown if there is a history of shrink swell subsidence in the local area. It is noted that planning consultation responses indicate that issues of subsidence have occurred within the surrounding properties. Further comment is requested.
- 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 confirm 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 have surface water flood risk.

4.8 The screening responses confirm that the site is not within an area identified to be at risk of flooding and will not change the proportion of hardstanding. This is 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 presence of utilities should be confirmed and an impact assessment undertaken, as required.

4.10 The scoping recommends a ground investigation is 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 site 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. However, no investigation has been undertaken at the rear which, based on topographic information and consultation responses, appears to be significantly built up and may comprise thicker Made Ground. Further investigation at the rear to confirm ground conditions is requested.

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 recommend a ground movement assessment (GMA) is 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 The Method Statement document produced states that "the ground outside the cellar area will be reduced down to the formation of the existing footings using the 1.5 tonne excavator". Clarification of the proposed depth and area of this excavation and the proximity to neighbouring foundations is requested.

4.16 Geotechnical parameters are provided within the Ground Investigation & BIA report and are accepted to be suitable for the anticipated ground conditions, subject to confirmation of the depth of Made Ground at the rear.

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.

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 underpin wall 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 5-10mm 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). However, this should be confirmed following the clarifications requested above. In addition, impacts to other sensitive assets (i.e. neighbouring swimming pool, rear retaining wall and utilities) should be provided where relevant.

4.23 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. Ground conditions at the rear of the property should be confirmed.

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 Clarification of the depth of Made Ground at the rear and subsidence of the surrounding area is requested.

5.8 Further details are requested on the construction methodology to confirm the proposed method is viable and the impacts to the neighbouring properties have been suitably assessed.

5.9 Geotechnical parameters and outlined 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). However, impacts to other assets in proximity to the proposed basement development are requested.

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

5.12 It cannot be 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, specifically:

- The ground model is not appropriate for the nature of the site.
- The conclusions have not been arrived at based on all necessary and reasonable evidence and considerations, in a reliable, transparent manner.
- The conclusions of the various documents/details comprising the BIA are not consistent with each other and the impacts to sensitive assets in proximity to the proposed development have not been considered.

5.13 Queries and comments on the BIA are described in Section 4 and Appendix 2.

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Appendix 1

Consultation Responses

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Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Shaw	Burgess Hill	26/08/2024	Evidence of subsidence in the local area.	Applicant to provide response.
			Sloped and made-up ground in proximity to the site.	Applicant to provide response.
			A ground movement assessment has not been carried out.	GMA provided in separate report and has been audited.
			Consdieration of sensitive assets i.e. neighbouring swimming pool, have not been included in the assessment.	Noted in Section 4 that assessment of neighbouring pool and retaining wall is required.
			Water flow assessment does not consider sloping ground.	Applicant to provide response.
Reidy	Burgess Hill	26/08/2024	Evidence of subsidence in the local area.	Applicant to provide response.
			Sloped and made-up ground in proximity to the site.	Applicant to provide response.
			Consdieration of sensitive assets i.e. garden retaining walls	Applicant to provide response.
			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.	Further details of the proposed methodology has been requested.
			The proposed basement layout is in proximity to neighbouring properties.	A GMA has been undertaken to assess the potential impact to neighbouring foundations.

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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.	Open – Section 4.3 & 4.15	
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.	Open – Section 4.6	
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.	Open – Section 4.22	

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Appendix 3

Supplementary Supporting Documents

None

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