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Basement Impact Assessment Audit

12 Park Village West, London NW1 4AE

For
London Borough of Camden

Project No.
14006-88

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 12 Park Village West, London NW1 4AE (planning reference 2024/2384/P). The basement is considered to fall within Category C 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 individuals who hold the qualifications required by CPG.

1.5 The main house at the property is a Grade II listed building with a basement. Proposals involve construction of a new basement beneath the Coach House and link structure, joining to the lower ground floor level of the main house.

1.6 No structural information is presented. The proposed construction method should be clearly stated with construction sequencing and the outline design of the temporary and permanent works provided.

1.7 The BIA has confirmed that the proposed basement will be founded within the London Clay Formation.

1.8 It is unlikely that the groundwater table will be encountered during basement foundation excavation although perched water was recorded. Additional groundwater monitoring is recommended to establish any seasonal fluctuations. The BIA states dewatering of excavations should be allowed for during construction. It is accepted there is no impact to the hydrogeology.

1.9 The site is not in an area identified to have surface water flood risk and there is no significant change in impermeable surfaces or discharge into the sewage network. It is accepted there is no impact to the wider surface water conditions, although this should be agreed by the LLFA.

1.10 The topographic survey is requested to confirm the conclusions relating to slope stability. No trees are to be removed therefore there will be no impacts on shrink-swell from the new basement.

1.11 The BIA states potential building damage and impact to the road can be limited to acceptable limits. This should be revisited following submission of the structural engineering information requested above and confirmation of the required excavation depths.

1.12 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. 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 29th July 2024 to carry out a Category C audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 12 Park Village West, London NW1 4AE, and planning reference 2024/2384/.

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 "Excavation of a basement beneath the coach house, front courtyard and gym; demolition of existing conservatory and construction of a new conservatory in the north terrace, internal and external alterations".

2.6 The Audit Instruction confirmed 12 Park Village West was involved, or was a neighbour to, listed buildings.

2.7 CampbellReith accessed LBC's Planning Portal on 31st July 2024 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment (BIA) by Geotechnical & Geoenvironmental Associates Limited (GEA), ref. J23136, rev. 0, dated 21st March 2024.
- Planning, Design and Access Statement by Whaleback Limited, ref. -, rev. 1, dated 5th June 2024.
- Proposed Plans & Block Plan by Adam Richards Architects (ARA), dated 10th May 2024:

- Location Plan-Existing, ref. 21-08-000, rev. P02.
- Location Plan-Proposed, ref. 21-08-001, rev. P02.
- Site Plan-Existing, ref. 21-08-002, rev. P02.
- Site Plan-Proposed, ref. 21-08-003, rev. P02.
- Lower Ground Floor Plan-Existing, ref. 21-08-099, rev. P03.
- Ground Floor Plan-Existing, ref. 21-08-100, rev. P03.
- First Floor Plan-Existing, ref. 21-08-101, rev. P03.
- Second Floor Plan-Existing, ref. 21-08-102, rev. P03.
- Roof Plan-Existing, ref. 21-08-103, rev. P03.
- Lower Ground Floor Plan-Proposed, ref. 21-08-109, rev. P03.
- Ground Floor Plan-Proposed, ref. 21-08-110, rev. P03.
- First Floor Plan-Proposed, ref. 21-08-111, rev. P03.
- Second Floor Plan-Proposed, ref. 21-08-112, rev. P03.
- Roof Plan-Proposed, ref. 21-08-113, rev. P03.
- Southeast Elevation-Existing ref. 21-08-200, rev. P03.
- Northeast Elevation-Existing ref. 21-08-201, rev. P03.
- Northwest Elevation-Existing ref. 21-08-202, rev. P03.
- Southeast Elevation-Proposed ref. 21-08-210, rev. P03

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	BIA section 1.3.2
Is data required by Cl.233 of the GSD presented?	No	Construction method and sequence should be provided.
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?	No	The topographic survey should be included.
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	BIA section 3.1.2
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA section 3.1.1
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA section 3.1.3
Is a conceptual model presented?	Yes	BIA section 5.0
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA section 4.0
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA section 4.0

Item	Yes/No/NA	Comment
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA section 4.0
Is factual ground investigation data provided?	Yes	BIA appendix b
Is monitoring data presented?	Yes	BIA section 5.3
Is the ground investigation informed by a desk study?	Yes	BIA section 2.0
Has a site walkover been undertaken?	Yes	BIA section 2.1, although in 2014
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	
Is a geotechnical interpretation presented?	Yes	BIA section 6.0
Does the geotechnical interpretation include information on retaining wall design?	Yes	BIA section 7.1.1
Are reports on other investigations required by screening and scoping presented?	NA	
Are the baseline conditions described, based on the GSD?	Yes	BIA sections 6.0 and 7.0
Do the baseline conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	BIA Part 4
Are estimates of ground movement and structural impact presented?	Yes	BIA Part 3
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	

Item	Yes/No/NA	Comment
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	BIA section 9.1.1
Have the residual (after mitigation) impacts been clearly identified?	Yes	BIA section 13.0
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	BIA section 12.1 Outline structural calculations should be provided.
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	BIA Part 4
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	BIA section 10.1
Are non-technical summaries provided?	Yes	BIA executive summary and section 12.3

4.0 DISCUSSION

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

4.2 The Design & Access Statement (DAS) identified that the subject site at 12 Park Village West is a Grade II Listed building located within the Regent's Park Conservation Area.

4.3 The architectural drawings and DAS show there is a basement beneath the main house only. Proposals involve the construction of a basement beneath the Coach House and link structure connecting to the existing basement (lower ground floor) of the main house. The BIA states new basement will extend to c.4.50m bgl at the Coach House and 2.50m to 3.50m bgl deep at the link structure.

4.4 The proposed basement floor level is not uniform. It is deepest beneath the Coach House and shallower beneath the link building and main house. Email correspondence with the Camden Planning Officer indicates the lowest proposed floor level is +32.03m AOD equivalent to 4.78m bgl at the Coach House (Appendix 3). Section DD drawing illustrates the basement level beneath the main house and new link building is c.1.70m above the Coach House basement floor.

4.5 The BIA is not supported by an engineering statement which defines the physical form of the proposed development, construction methods or the design of the basement and drainage. Outline structural engineering information should be provided as per the Camden scope of engineering services. Drawings illustrating the stages of construction, propping arrangements and sequence are requested.

4.6 The BIA has been informed by a desk study and site-specific ground investigation undertaken in 2014, both appended to the BIA. The ground conditions encountered comprise Made Ground to depths of between 0.30m and 1.70m bgl, below which lies the London Clay Formation extending to the maximum depth of investigation of 5.00m bgl. The BIA notes the London Clay Formation extends to c.35m to 40m bgl based on historical borehole records.

4.7 The maximum depth of investigation is 5.00m bgl but due to differing site levels, the exploratory holes extended to elevations of between 29.70 and 31.65m OD which are all below the lowest proposed floor level. Quantitative strength data is limited to Pocket Penetrometer (PP) measurements, which are an imprecise testing method according to the UK Specification for Ground Investigation (ICE, 2022).

4.8 The trial pit summary (BIA section 5.6) shows the existing Coach House foundations extend to depths of between 0.50m and 1.20m bgl, and main house southern wall foundation to 0.50m bgl. The associated logs show all these foundations bear on Made Ground, locally with abundant rootlets.

4.9 Perched groundwater was locally encountered at BH03 and TP05 at depths of between 1.20m and 1.30m bgl respectively. An isolated groundwater inflow was recorded locally at BH01 3.00m bgl. Groundwater was not encountered in the remaining exploratory hole locations. The BIA notes the absence of extensive saturated ground conditions across the site.

4.10 Two groundwater monitoring visit records show water levels of 0.60m and 1.10m bgl within the standpipes at BH01 and BH05 respectively. GEA interpret this water as surface water ingress into the installations rather than true groundwater level.

4.11 The Subterranean (groundwater) Screening Assessment indicates the site is underlain by the London Clay Formation, with an aquifer classification as Unproductive Strata. There are no watercourses or potential spring lines recorded within 100m distance of site.

4.12 The development will not significantly alter the quantity of hardstanding area at site so there will no loss of permeable area.

4.13 The site investigation suggests the basement will not extend below the groundwater table although localised perched water maybe encountered. The BIA recommends control measures for limited water ingress will likely be required and that the contractor should utilise sump pumping and have a contingency plan to deal with more significant inflows as a precautionary measure.

4.14 The Groundwater Screening notes drainage will be designed to maintain the existing situation and drain into the public sewerage network.

4.15 It is accepted the will be no significant impact to the local and wider hydrogeological environment.

4.16 The Surface Flow and Flooding Screening Assessment states the site has a very low flooding risk from surface water, sewers, reservoirs (and other artificial sources), groundwater and fluvial/tidal watercourses.

4.17 The BIA states site drainage will be directed to the public sewer, as per the existing situation. There will not be an increase in impermeable area above the basement, so the surface water flow regime will be unchanged. It is accepted there will be no impact to the hydrological setting, although this should be confirmed by the LLFA.

4.18 Stability Screening Assessment identifies sloped ground >7° in the eastern part of the site and in the wider area however, the basement is in the western part of site is remote from these features. The topographic survey drawing should be included to support this conclusion.

4.19 Stability screening confirms the London Clay Formation is prone to shrink-swell subsidence. Borehole BH05, located approximately 10m distance east of the new basement, identifies desiccation to an approximate depth between 3.50m and 4.50m bgl. Geotechnical laboratory testing has been undertaken to inform heave protection measures and the BIA notes foundations must be designed in accordance with NHBC guidelines accounting for shrink swell behaviour. The BIA recommends foundation excavations are inspected by a suitably qualified engineer and allowances made in the design for existing and proposed trees. However, the BIA states there are no trees that need to be felled for the new basement and therefore no impacts from the proposals on shrink-swell.

4.20 The stability screening identifies a public highway and pedestrian right of way, Park Village West, within 5.00m distance on the site boundary and the impacts from the basement proposals are considered in the Ground Movement Assessment (GMA).

4.21 The basement is >18m from neighbouring properties however the development will result in an increase in differential foundation depth relative to the existing Grade II listed building, which is included in the GMA.

4.22 The recommended geotechnical parameters in BIA sections 6.1 and 7.1.1 use lower bound values that correspond with the ground conditions encountered, published literature and are considered reasonably conservative. The BIA recommends further monitoring is undertaken to verify the groundwater conditions and states a fully effective drainage system must be considered in the basement design.

4.23 The Ground Movement Assessment (GMA) assumes the basement is to be formed by traditional hit and miss underpinning but notes that a contiguous or secant pile retaining wall solution are also options. The form of construction must be confirmed to verify the GMA conclusions. If a pile foundation solution is selected the BIA must be revised accordingly.

4.24 The GMA assumes a maximum excavation depth of 4.50m, but floor levels and depths confirmed separately by email (see Appendix 3) indicate that excavation will extend to approximately 5m bgl.

4.25 The BIA notes temporary support measures should include lateral propping for underpin walls and cross bracing at the corners of the new retaining walls. The BIA recommends a suspended basement floor slab to accommodate heave.

4.26 The GMA uses PDisp and XDisp software to predict vertical (heave and settlement) and horizontal/lateral ground movements in two stages of construction:

1. Installation of proposed underpinning.
2. Combined movements from installation and subsequent excavation in front of underpinned walls.

4.27 Whilst the CIRIA approach utilised in the XDisp software is intended for embedded retaining walls, it is accepted that it can predict ground movements that are within the range typically anticipated for underpinning techniques carried out with good control of workmanship.

4.28 Ground movements predicted by the PDisp assessment have been imported into XDisp software to assess the horizontal and vertical ground movements around the development and their associated damage category for neighbouring structures.

4.29 Combined movements indicate total vertical settlement between 5-10mm, and horizontal movement of 6-12mm. These correspond with typical movements expected for a single lift of underpinning however, the number of lifts should be clearly stated given the proposed depth of basement excavation.

4.30 The neighbouring structures and infrastructure assessed in the GMA comprise the Grade II list building and the public road to the south. The building damage assessment results predict damage to 12 Park Village West will not exceed Burland Damage Category 1 (Very Slight) and that movements at the highway will be negligible. These conclusions should be confirmed following submission of the structural information requested above and confirmation of the excavation depth.

4.31 The BIA states the ground movement predictions should be checked by monitoring the existing structures to ensure no excessive movements occur that would lead to damage.

5.0 CONCLUSIONS

5.1 The BIA has been carried out by individuals who hold the qualifications required by CPG: Basements.

5.2 The BIA has been informed by a desk study and site-specific ground investigation although there is limited strength data.

5.3 Both underpinning and pile foundation solutions are considered in the BIA. The proposed construction method should be clearly stated.

5.4 The BIA has confirmed that the proposed basement will be founded within London Clay Formation. However, an engineering statement, construction methodology for permanent and temporary works, sequence and outline structural calculations should be provided as per the Camden scope of engineering services. Drawings showing the construction sequence and propping arrangements are requested.

5.5 The site is not underlain by an aquifer and no impacts to the hydrogeology are predicted. It is unlikely that groundwater will be encountered during basement foundation excavation however, perched water was encountered locally and the BIA notes dewatering of excavations may be required during construction. The BIA recommends that further groundwater monitoring is undertaken to confirm any seasonal fluctuations and inform design.

5.6 It is reported that site drainage will be directed to the public sewer, as per the existing situation. It is accepted there will be no impact to the hydrological setting, although this should be confirmed by the LLFA.

5.7 The development is located near the crest of a slope. The topographic survey drawing should be provided to support the BIA conclusions.

5.8 The BIA notes no trees are being removed in the western part of the site and the basement does not alter the current baseline.

5.9 The basement is remote from any neighbouring properties however, there are potential impacts to the existing Grade II listed host building. The building damage assessment predicts damage to the listed building will not exceed Burland Category 1 (Very Slight) and there will be negligible impact to the road. This should be revisited following submission of the structural information requested above and confirmation of the depth of excavation.

5.10 The BIA recommends movement monitoring during excavation and construction.

5.11 Queries and comments on the BIA are described in Section 4 and Appendix 2. At present, 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 methodologies and assumptions are not clearly stated.
- The conclusions have not been arrived at based on all necessary and reasonable evidence.

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Appendix 1

Consultation Responses

None

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Appendix 2

Audit Query Tracker

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Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Stability	Include the topographic survey drawing to support conclusions regarding slopes	Open – paragraph 4.18	
2	Stability	An engineering statement, construction method and outline structural engineering information should be provided	Open – paragraph 4.5	
3	Stability	Drawings of the construction sequence and propping arrangements should be provided	Open – paragraph 4.5	
4	Stability	The form of construction must be confirmed to verify the GMA conclusions	Open – paragraph 4.5 & 4.30	
5	Stability	The depth of excavation must be confirmed to verify the GMA conclusions	Open – paragraph 4.24 & 4.30	

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Appendix 3

Supplementary Supporting Documents

Proposed Level Information

From: Josh Lawlor <Josh.Lawlor@camden.gov.uk>
Sent: Monday, July 29, 2024 11:29 AM
To: Katharine Barker <katharinebarker@campbellreith.com>; CamdenAudit <CamdenAudit@campbellreith.com>
Cc: Timothy Lee <Timothy.Lee@camden.gov.uk>
Subject: FW: 12 Park Village West 2024/2384/NEW

Kat,

Please proceed with the audit, section D is completed

The architect has provided the following details:

Basement FFL - +32.03 (the lowest proposed floor level)

Lower Ground FFL- +33.70 (taken from the new link building)

Ground Floor FFL - +36.81 (taken from the main entrance hall)

Garden FFL - +33.62 (taken from just beyond the existing conservatory)

Pavement FFL - +35.95 (taken from the pavement in front of the garage)

So the proposed basement is -

- 4.78m below the existing ground floor

- 1.67m below the existing lower ground floor

- 1.59m below the garden (where it meets the rear of the building)

- 3.92m below the pavement

Regards

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Principal Planning Officer

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