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Basement Impact Assessment Audit

47 Platt's Lane, London NW3 7NL

For
London Borough of Camden

Project No.
14006-95

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 47 Platt's Lane (planning reference 2024/1261/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 on 05/09/2024 and reviewed it against an agreed audit check list.

1.4 The qualifications of the authors do not comply with the requirements of CPG: Basements.

1.5 The BIA confirms that the proposed basement consists of a single storey (3m) construction formed by excavating under the front footprint of the house and extending the excavation to the front garden area.

1.6 The BIA provides conflicting account of site geology and hydrogeology based on record information. Site specific ground investigation and monitoring of groundwater are required.

1.7 Numerous screening questions are omitted from the BIA. These should be addressed and the scoping and impact assessment updated as necessary.

1.8 The site is located in RedFrog Neighbourhood and the BIA must demonstrate that it has considered all criteria presented in the RedFrog Neighbourhood Plan in its project.

1.9 The BIA did not identify that the property is located on a street which was flooded in 2002. Therefore, the need for the flood risk assessment should be considered.

1.10 The structural design is based on assumed soil properties which have not been validated and have not adopted values reported in the BIA. Soil properties require to be determined by site investigation and applied consistently through the BIA and supporting documents

1.11 Vertical ground movements predicted in the GMA do not reflect those typically generated by underpinning and the GMA does not consider horizontal displacements. The conclusions with respect to building damage are therefore not supported.

1.12 The GMA should also include a zone of influence diagram and confirm that all necessary structures and infrastructure (including the flats above) have been assessed.

1.13 It is noted that a proposal is provided for a movement monitoring strategy for neighbouring properties during excavation and construction.

1.14 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 4 September 2024 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 47 Platt's Lane, London, NW3 7NL and 2024/1261/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.
- Neighbourhood Plan: Redington and Frognal (RedFrog).

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 "Creation of lower ground floor basement with lightwell, new balustrade around rear ground floor extension."

2.6 The Audit Instruction confirmed 47 Platt's Lane, London, NW3 7NL is not listed and is not a neighbour to listed buildings.

2.7 CampbellReith accessed LBC's Planning Portal on 05/09/2024 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report - Rev 01 (Amended) by Articulus, Ref: AR0732, Revision 01, Date: 05/08/2024
- Construction Method Statement by Articulus, Ref: AR0732, Date: 08/08/2024 encloses the following documents as appendices:

- General Specification for Structural Work by Articlus, Ref: AR0732, Date: July 2024.
- Structural Calculations and drawing by Articlus, Ref: AR0732, Date: July 2024.
- Building Damage Assessment Report by Articlus, Ref: EWGCE-15670-XX-R-BDA-001, Date: 15,04,2024

- Planning Application Drawings consisting of:
  - Location Plan - 47PL- Existing by UPP Architecture and Planning, Ref: 47PL-A-06-001, Date: not provided.
  - Existing Plans - 47PL- Existing by UPP Architecture and Planning, Ref: 47PL-A-06-001, Date: not provided.
  - Proposed Plans - 24.03.21 - 47PL- Proposed by UPP Architecture and Planning, Ref: 47PL-A-01-002, Date: not provided.
- Planning Consultation Responses
  - RegFrog Neighbourhood Forum Hydrology, date: 23/07/2024 – request to confirm area of hard surfacing due to concern over surface water flooding and to refer to surface water features in Redington and Frognal Neighbourhood Plan.
  - Lisa B, date: 23/07/2024 – concern over flooding.

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3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	The author and reviewer are both Chartered Engineers However, input from Chartered Geologist and proof of expertise in ground engineering is missing.
Is data required by Cl.233 of the GSD presented?	No	Construction methodology to be confirmed.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	See BIA Section 3. Desktop Study
Are suitable plan/maps included?	No	Maps and diagrams including relevant Arup GSD map extract are attached. BIA did not refer to RedFrog Neighbourhood Plan.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	See BIA appendices.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	Not all screening questions addressed - See Section 5.2 Slope Stability
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	Not all screening questions addressed - See Section 5.1 Groundwater Flow
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	Not all screening questions addressed - See Section 5.3 Surface Water and Flooding

Item	Yes/No/NA	Comment
Is a conceptual model presented?	No	Ground and Groundwater conditions not established. Contradictory information is presented.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	Cannot be confirmed until screening exercise is completed.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	No	Cannot be confirmed until screening exercise is completed.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	Cannot be confirmed until screening exercise is completed.
Is factual ground investigation data provided?	No	
Is monitoring data presented?	No	No site-specific ground investigation was included in the BIA.
Is the ground investigation informed by a desk study?	NA	No site-specific ground investigation was included in the BIA.
Has a site walkover been undertaken?	Yes	In BIA section 5.2 Slope Stability screening, it is stated that 'Site Walkover has been carried out.'
Is the presence/absence of adjacent or nearby basements confirmed?	No	BIA records presence of partial basements beneath neighbouring properties but no evidence provided.
Is a geotechnical interpretation presented?	Yes	This should be revised after site-specific ground investigation.
Does the geotechnical interpretation include information on retaining wall design?	No	
Are reports on other investigations required by screening and scoping presented?	No	This cannot be confirmed until screening exercise completed.

Item	Yes/No/NA	Comment
Are the baseline conditions described, based on the GSD?	No	Ground and Groundwater conditions are not confirmed.
Do the baseline conditions consider adjacent or nearby basements?	No	The existence of adjacent or nearby basements is not confirmed by the BIA but adjacent properties are assumed to have partial cellars.
Is an Impact Assessment provided?	Yes	See BIA Section 9 Impact Assessment
Are estimates of ground movement and structural impact presented?	Yes	However, justification required to demonstrate validity of the geotechnical data used to calculate these.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	Some screening questions are missing. Some screening responses should be forwarded to scoping
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	Not all scoping issues have been resolved.
Has the need for monitoring during construction been considered?	Yes	See 9.4 Control of Construction Works. Appendix E Monitoring Drawings
Have the residual (after mitigation) impacts been clearly identified?	No	BIA should provide further details.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Horizontal ground movement is not analysed. Predicted vertical movement not considered realistic. Graphical representation of analysis should be provided to show zone of influence
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	Aquifer status and groundwater model not confirmed.

Item	Yes/No/NA	Comment
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	Not demonstrated.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	However, further justification for conclusion is required.
Are non-technical summaries provided?	No	Non-technical summary is not provided.

4.0 DISCUSSION

4.1 The Basement Impact Assessment (BIA) has been carried out by engineering consultants Articlus, a multi-disciplinary company providing Architectural and Structural design services. The individuals concerned in its production have suitable structural and civil engineering qualifications. However, input from a Chartered Geologist, required under Camden CPG, is missing in its production and there is no evidence of input from an individual with expertise in ground engineering.

4.2 A 'General Specification for Structural Works,' a structural strategy report (SSR), enclosed as an appendix within Construction Method Statement (CMS), has been carried out by the same firm. The author and reviewer are both chartered structural engineers.

4.3 The LBC instruction to proceed with the audit identified that the basement proposal is not listed or is not a neighbour to listed buildings. The audit has identified that the property is located in the Redington and Frognal (RedFrog) Conservation Area.

4.4 RedFrog Neighbourhood of Camden has specific sets of safeguards especially for water environment. The BIA must demonstrate that it has considered all criteria described in RedFrog Neighbourhood Plan.

4.5 The BIA confirms that 47 Platt's Lane is a three-storey semi-detached dwelling appears to be constructed circa 1890s built with traditional construction method of solid masonry brickwork external wall, internal timber studwork, suspended timer floor joists and a timer cut-roof. It has a basement to approximately 2.20m depth beneath the rear of the property. The property shares a party wall with 45 Platt's Lane.

4.6 The BIA confirms that the proposed basement consists of a single storey (3m) construction formed by excavating under the front footprint of the house and extending the excavation to the front garden area and the construction will include a lightwell and associated internal alterations. The BIA does not confirm the presence of adjacent basements but indicates that they have similar partial basements to that existing at No 47 Platt's Lane.

4.7 The Desktop Study in section 3 of the BIA encloses Appendix C which consists of a screen cut-out of BGS GeoIndex map and historic borehole log (depth c.5m) near the site, dated 21/11/2017, with groundwater monitored at 3.50m bgl on 07/12/2017.

4.8 The BIA states, "site's geology is Claygate Member – Clay, silt and sand, which is subsequently underlain by the London Clay Formation with no record of superficial deposits." However, this is inconsistent with other references to superficial deposits comprising 'Downwash' being present.

4.9 No ground investigation report is offered. Section 4.2, paragraph 3 of BIA states that "following planning permission, a comprehensive ground site investigation will be carried out".

4.10 The BIA presents conflicting descriptions of the aquifer status, stating that superficial deposits comprise an aquifer (Section 4.2, 2nd paragraph) and, elsewhere, that an aquifer is absent (Section 4.5 paragraph 2). In addition to the discrepancy, the BIA does not identify that the Claygate Member is designated as an aquifer. Ground investigation and groundwater monitoring for this site are therefore required to determine the ground and groundwater model.

4.11 The following screening questions are missing from the BIA: Q1 of Surface flow and flooding screening, Q3 of Subterranean (groundwater) flow screening and Q4, Q11 and Q12 of Slope stability screening. The BIA must be updated with the above missing screening questions.

4.12 The BIA identifies in Groundwater Screening that the proposed site is underlain by Secondary A Aquifer. However, it is not carried forward to scoping. Also, at screening stage, it is unknown if the depth of proposed development will extend beneath the water table surface due to the lack of site-specific groundwater monitoring. Therefore, screening questions 1a. and 1b. should be forwarded to scoping.

4.13 The BIA states in slope stability screening that a walkover has been carried out. However, no evidence (date, photographs and list of inspections) was provided.

4.14 The BIA states in Groundwater Scoping that the basement will not extend into aquifer and the underlying London Clay is classified by Environment Agency as "Unproductive Stratum". This is not accepted as the site is underlain by Claygate Member which is designated as Secondary A Aquifer.

4.15 The scoping section of the BIA for surface flow and flooding, stability and groundwater will require a review and potential update when the full set of screening questions is presented.

4.16 The BIA states that currently most of the site is covered with hardstanding area and confirms that there will be no increase in hardstanding area, therefore no increase in surface water flow. BIA identifies that the proposed site is located in Flood Zone 1 which has a low risk of flooding from rivers and sea. The BIA should note that the property is located on a street which was flooded in 2002, and the need for the flood risk assessment should be considered.

4.17 The CMS includes a construction sequence, which includes the installation of new RC walls following a typical hit and miss sequence. Each excavation will be 1m width x 0.50m depth in order to limit any movement of soil. Local pumping is to be provided for any inflow of water and it is collected to be settled and filtered before being discharged. The BIA states in its Introduction that the construction methodology and details will be finalised during detailed design stage. This is not accepted; the BIA should assess the actual impacts of the proposed design and construction.

4.18 The CMS confirms that structural design is based on assumed bearing capacity (of 100 kN/m^2), angle of shearing resistance (22°), effective cohesion (0 kN/m^2) and saturated bulk weight (19 kN/m3). However, the nature of the bearing stratum has not been confirmed and the assumed bearing capacity is not justified by the factual data presented (for example, soft clay). The values proposed are not consistently applied in the outline design.

4.19 The BIA states that all these values are subject to confirmation by a geotechnical report. As noted above, this information should form part of the BIA.

4.20 Structural calculations and drawings are also enclosed in CMS, including the outline design of the retaining walls. Justification is required for the selection of soil parameters such as the angle of internal friction at the base of the wall and the groundwater assumption.

4.21 A Ground Movement Assessment (GMA) and its results are presented in Building Damage Assessment Report. The GMA does not provide the assumptions made about surrounding foundation depths. It does not consider the neighbouring flats within the host building.

4.22 The report confirms that it uses both PDisp and XDisp modelling methodologies which assess the potential movements during underpinning, excavation and long term structural loading. Whilst XDisp is not intended for use with underpinning, it is accepted that in certain circumstances it can predict typical ground movements associated with this form of construction. Without the input data and a validated ground model, the assessment cannot be audited, although a number of observations are made below about the approach.

4.23 The GMA presents maximum vertical displacements for both adjacent properties during underpinning, excavation and loading. However, the predicted settlement of 1mm or less is not realistic considering the structural loads applied, the settlement anticipated due to excavation, and construction movements. No horizontal ground movements around the excavation are included in the GMA.

4.24 The BIA states that damage to surrounding structures will be no worse than '0' (negligible) on Burland Scale, however, this is not supported by the GMA as noted above.

4.25 The GMA should also include a zone of influence diagram and other relevant graphical representations for all structures, retaining wall, utilities, highways within the zone.

4.26 BIA confirms that Thames Water sewer runs along its eastern border. The applicant should notify Thames Water regarding basement development.

4.27 The BIA contains appendix E: Monitoring Drawing which confirms that temporary reference points will be establish on neighbouring buildings for settlement monitoring and the readings will be taken by use of a total station. The audit suggests traffic light monitoring with trigger level should be adopted and the system should operate in accordance with Observational Method as defined in CIRIA Report 185.

5.0 CONCLUSIONS

5.1 The qualifications of the authors do not comply with the requirements of CPG: Basements. Input from a Chartered Geologist is required together with evidence of input by an individual with expertise in ground engineering.

5.2 The BIA states in its Introduction that the construction methodology and details will be finalised during detailed design stage. This is not acceptable as BIA should assess the impacts of the intended design and construction.

5.3 Screening and scoping assessments are presented and informed by desk study information. However, Q1 of surface flow and flooding screening, Q3. of subterranean (groundwater) flow screening and Q4, Q11 and Q12 of slope stability screening are missing and should be addressed and the scoping updated as necessary.

5.4 The BIA states that the basement will not extend into the aquifer but provides conflicting account of site geology and hydrogeology. Therefore, site-specific ground investigation and monitoring of groundwater is required.

5.5 The site is located in RedFrog Neighbourhood and BIA must demonstrate that it has considered all criteria presented in RedFrog Neighbourhood Plan in its project.

5.6 The BIA states that the site is located in Flood Zone 1 and has a low risk of flooding from surface water. However, it did not identify that the property is located on a street which was flooded in 2002. Therefore, the need for the flood risk assessment should be considered.

5.7 The structural design is based on assumed soil properties which have not been validated and have not adopted values reported in the BIA. Soil properties require to be determined by site investigation and applied consistently through the BIA and supporting documents.

5.8 The GMA presents maximum vertical displacement for both properties but the predicted settlement of 1mm or less is not considered realistic. The GMA does not consider horizontal displacements. The conclusions with respect to building damage are therefore not supported.

5.9 The GMA should also include a zone of influence diagram and confirm that all necessary structures and infrastructure (including the flats above) have been assessed.

5.10 BIA confirms that Thames Water sewer runs along its eastern border. The applicant should notify Thames Water regarding basement development.

5.11 It is noted that proposals are provided for a movement monitoring strategy during excavation and construction.

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 person(s) undertaking the BIA do not hold qualifications relevant to the matters being considered, in accordance with the requirements set out in CPG: Basements.

- The Basement Impact Assessment has not been prepared in accordance with the processes and procedures set out in CPG: Basements.
- The conclusions have not been arrived at based on all necessary and reasonable evidence and considerations, in a reliable, transparent manner, by suitably qualified professionals, with sufficient attention paid to risk assessment and use of cautious or moderately conservative engineering values/estimates.
- The conclusions of the various documents/details comprising the BIA are not consistent with each other. The conclusions are not sufficiently robust and accurate and are not accompanied by sufficiently detailed amelioration/mitigation measures to support the grant of planning permission in accordance with Policy A5 of the Local Plan, in respect of:
  - maintaining the structural stability of the building, the ground and any neighbouring properties to within limits set out in the policy/guidance
  - avoiding adversely affecting drainage and run-off or causing other damage to the water environment and
  - avoiding cumulative impacts on ground and structural stability or the water environment in the local area.

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

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Appendix 1

Consultation Responses

Residents' Consultation Comments [Request 'relevant comments' from the Case Officer]

Surname	Address	Date	Issue raised	Response
Lisa B	Not given	23/07/2024	Potential for Flooding	See audit paragraph 4.16
RedFrog Neighbourhood Forum	Not given	23/07/2024	Potential for Flooding	See audit paragraph 4.16

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Appendix 2

Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA requirements	4.1 Please provide confirmation that Hydrogeology and Stability assessments have been produced in conjunction with professionals with required qualifications and experience	Open	
2	BIA requirements	4.4 BIA to refer to RedFrog Neighbourhood Plan	Open	
3	BIA requirements	4.11 Q1 of Surface flow and flooding screening, Q3 of Subterranean (groundwater) flow screening and Q4, Q11 and Q12 of Slope stability screening are missing and they should be added to the updated BIA.	Open	
		4.15 Scoping to be updated once screening questions completed.	Open	
4	BIA requirements	4.8 No site specific ground investigation and groundwater monitoring is presented.	Open	
5	BIA requirements	4.13 Evidence of site walkover to be presented.	Note	
6	Stability	4.23 GMA should provide input data without which the assessment cannot be audited. It should include assessment for horizontal ground movement, realistic predictions of vertical movement, and additional graphical representations.	Open	
7	Surface Water and Flooding	4.16 The property is located on a street which was flooded in 2002, and therefore, the need for the flood risk assessment should be considered.	Open	
8	Hydrogeology	4.10 Aquifer status and groundwater model to be clarified.	Open	

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Appendix 3

Supplementary Supporting Documents

None

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