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32 Kylemore Road
NW6 2PT

Basement Impact Assessment
Audit

For

London Borough of Camden

Project Number: 12727-87
Revision: D1

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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 32 Kylemore Road (planning reference 2018/2481/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 prepared by Hall Davis Consulting Engineers. Details of the author's qualifications will be required to demonstrate compliance with LB Camden's requirements.

1.5. It is recommended that a site investigation are undertaken to confirm the founding soil stratum for the new foundations, expose existing foundations and assess groundwater conditions.

1.6. The structural proposals comprise underpinning of existing Party Wall foundations and the construction of the front lightwell using the same methodology.

1.7. It is suggested that additional information is provided on the drawings to clarify the underpinning sequence.

1.8. A Ground Movement Assessment (GMA) will be required to demonstrate the impact of the front lightwell construction on the highway and neighbouring buildings stability.

1.9. The BIA reports that any damage that may occur due to development proposals is expected to be no worse than Category 1 (very slight). However, a formal ground movement assessment has not been produced to validate this assumption.

1.10. Proposals are provided for an outline movement monitoring strategy and this should be implemented.

1.11. It is recommended that Camden SFRA and GSD are consulted to assess the risk of flooding due to surface water, sewers and groundwater in more detail.

1.12. It is accepted that the development proposals will not impact on the wider hydrogeology of the area.

1.13. Given the above, it cannot be confirmed that the proposal conforms to the requirements of CPG Basements. A number of requests for additional information is provided in Appendix 2 of this audit.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 8 June 2018 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 32 Kylemore Road, NW6 2PT, Camden Reference 2018/2481/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

- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.
- Camden Planning Guidance Basements. March 2018.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.
- Local Plan Policy A5 Basements.

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;

d) 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 basement incorporating a front lightwell" and confirmed that the development neither involves nor does it neighbour any listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal on 18 July 2018 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA) by Hall Davis Consulting Engineers
- Planning Application Drawings consisting of

  Existing Floor Plans (Drg. 18-66.1 Nov 17)
  Proposed Plans and Elevations (Drg. 17-176.2 06/06/18 Rev. A)
  Existing/Proposed Sections (Drg. 18-66.3 Nov 17)
  Existing/Proposed Elevations (Drg. 18-66.4 Nov 17)

- Planning, Design & Access Statement (Aitchison Raffety, May 2018)

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	Information on qualifications not included in the BIA.
Is data required by Cl.233 of the GSD presented?	Yes	
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	BIA and drawings. Note that limited maps have been consulted.
Are suitable plan/maps included?	No	GSD/Camden SFRA and "lost river" of London (Barton 1992) maps have not been consulted or included.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	Those maps that have been included are adequate. No site plans showing the location of the boreholes, referenced in the BIA, have been included.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	GSD maps not referenced.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	GSD/SFRA maps not referenced.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Environment Agency map consulted only. Camden SFRA maps not referenced.
Is a conceptual model presented?	Yes	Limited description of soil provided in various sections. Borehole data (located 180m from site) included in Appendix.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA 4.1 and 4.2.
Hydrogeology Scoping Provided?	No	

Item	Yes/No/NA	Comment
Is scoping consistent with screening outcome?		
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	
Is factual ground investigation data provided?	Yes	Nearby borehole data presented only. Note that borehole located approx. 180m from proposed development.
Is monitoring data presented?	No	It is suggested that no groundwater is likely to be encountered.
Is the ground investigation informed by a desk study?	NA	A ground investigation has not been carried out.
Has a site walkover been undertaken?	No	No evidence of a site walkover has been included in the BIA.
Is the presence/absence of adjacent or nearby basements confirmed?	No	No information on adjacent or nearby basements provided in the BIA.
Is a geotechnical interpretation presented?	Yes	Very limited geotechnical interpretation, based on existing nearby borehole data, has been included in the BIA. Additional information is required.
Does the geotechnical interpretation include information on retaining wall design?	No	Calculations of retaining wall design based on assumptions have been presented in the BIA.
Are reports on other investigations required by screening and scoping presented?	No	
Are the baseline conditions described, based on the GSD?	Yes	It is noted that very limited information has been provided on geology and groundwater conditions. A number of GSD/Camden SFRA maps have not been consulted.
Do the base line conditions consider adjacent or nearby basements?	No	No information on adjacent basements included.
Is an Impact Assessment provided?	Yes	Very generic without details or site specifics.
Are estimates of ground movement and structural impact presented?	No	A GMA has not been carried out.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	No	The BIA does not clearly address the impact of the excavations on the stability of the public highway and adjacent properties.

Item	Yes/No/NA	Comment
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	
Has the need for monitoring during construction been considered?	Yes	Outline movement monitoring strategy included in the BIA section 4.4.5.1
Have the residual (after mitigation) impacts been clearly identified?	N/A	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	A GMA will be required to demonstrate this.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Section 4.4.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	Section 4.4
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	Section 4.4.4.2. It is to be noted that the BIA makes an assumption on the Damage Category with no quantitative analysis to support this assumption.
Are non-technical summaries provided?	No	

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by Hall Davis Structural Engineers. The author of the BIA has not included information on his qualifications that demonstrate compliance with GSD requirements. Confirmation of satisfactory credentials is required.

4.2. The Planning and Design, and Access Statement report identified that the property "is not statutorily listed and does not lie within a Conservation Area".

4.3. It is noted that the proposals are informed by a desktop study and that no ground investigation has been carried out. The BIA includes borehole data obtained during a ground investigation, carried out at a site located approximately 180m from the proposed development, in August 1969. In addition, reference is made to another borehole relating to a development located at an approximate distance of 50m. The BIA states that the made ground is underlain by the London Clay and that no groundwater was encountered. It is noted that the second borehole data has not been presented in the BIA.

4.4. The BIA does not provide any information on the thickness of soil strata at the site. The borehole data included in the BIA indicates made ground up to 5.3m bgl. A ground investigation will be required to ascertain the soil conditions on site. Trial pit investigation is likely to be adequate to establish the thickness of made ground. This would also allow confirmation of the founding soil stratum for the proposed underpinning, which is anticipated to be London Clay. In addition, the groundwater levels should be recorded to validate the assumptions made in the BIA.

4.5. The structural engineering proposals involve the construction of a "new single storey lightwell leading off from the existing lower ground floor" which is proposed to be lowered by approximately 850mm. The BIA does not provide a detailed description of the new basement structural elements (e.g. slab thickness).

4.6. It can be deduced from the calculations and drawings that traditional RC underpinning (350mm thick) of party walls is proposed to enable the lowering of the existing lower ground floor level. RC walls and footings, 350mm in thickness, have been proposed for the lightwell construction by the engineer. The report makes reference to the use of horizontal propping throughout the construction of the basement. It is noted that the sequence of the underpinning works is not clearly indicated on the drawings and no details of slab construction have been provided. The BIA also suggests that "further information will be used to determine the final concrete wall and base widths, reinforcement sizes and other structural details", without indicating the source and nature of the information.

4.7. The BIA does not discuss potential heave pressure that may occur due to soil excavation. This may need to be given consideration in the detailed design, particularly in the case of the front lightwell construction. The basement slab design will need to demonstrate adequate capacity to resist the potential ground heave pressures.

4.8. It has been noted that the design of the underpinning is based on assumed maximum allowable bearing pressures of 100kN/m^2. The calculations indicated a maximum bearing pressure of 96.9kN/m^2 at the base of the footings. Considering the founding level this may be a reasonable assumption, however evidence is required to confirm the soil stratum at foundation level.

4.9. The BIA reports that no groundwater would be encountered during excavation; however, groundwater table fluctuations mean that water may be encountered during excavation and appropriate contingency measures may need to be allowed for to deal with this.

4.10. A quantitative assessment presenting the potential structural movement and associated damage category has not been included in the BIA. The report assumes that any damage, which may be caused by the basement construction, is expected to correspond to Category 1 (Very slight). This assumption is based on a number of factors including shallow depth of underpinning, stressed state of the soil and the use of horizontal propping throughout the basement construction stage.

4.11. The BIA does not provide conclusive information on the stability of the highway given the proposed depth of the front lightwell construction. No indication of the potential deflections, at the top of the lightwell retaining concrete wall, have been included in the BIA. It is noted that the calculations present the design for a propped cantilever, however the retaining wall is not continuously propped at the top. In fact, the wall spans between the returns up to 4.8m and the BIA does not confirm whether or not lateral restraint is provided by the proposed stairs.

4.12. A Ground Movement Assessment will be required to demonstrate that the excavation and construction of the front lightwell will not affect the stability of the highway and neighbouring structures.

4.13. An outline movement monitoring strategy relating to the existing neighbouring properties, including party walls, has been included in the BIA. This discusses frequency of monitoring and trigger levels for lateral and vertical movement of walls.

4.14. The BIA confirmed that no trees are proposed to be felled and no foundation works are anticipated within the existing trees' root protection areas.

4.15. The BIA discusses the area of hardstanding due to the development proposals and confirmed that there will be no increase in hard surfaced areas.

4.16. The BIA has referred to limited sources of information in assessing the slope stability, hydrology and hydrogeology at the site. It is acknowledged that the map produced by the Environment Agency indicates a low flood risk at the location of the property. It is noted that areas in the immediate proximity of the property are of low, medium and high flood risk. It is also noted that the maps found in the ARUP GSD and Camden SFRA have not been referenced. However, it is accepted that the development is unlikely to have a significant impact on the wider area hydrology and hydrogeology.

5.0 CONCLUSIONS

5.1. The BIA has been prepared by Hall Davis Consulting Engineers. The author of this document is required to provide details of his qualification to demonstrate compliance with the GSD.

5.2. It has been confirmed that the development does not involve any listed buildings and is not located in a Conservation Area.

5.3. The drawings appended in the BIA indicate that level of the new foundations to be approximately 4m bgl. Further information is required to determine the soil conditions at the founding level of the proposed underpinning.

5.4. Further clarification is required on the drawings in relation to the underpinning sequence, methodology (i.e. hit and miss) and width of any one underpinned section.

5.5. Trial pit investigation is required to confirm site soil conditions and expose the Party Wall foundations.

5.6. Additional information on and interpretation of the 2 sets of borehole data, referenced in the BIA, is to be provided by the author.

5.7. Although the BIA reports that groundwater inflows are not anticipated during basement construction, it may be prudent that contingency measures are allowed for to deal with this.

5.8. The front lightwell structural slab design may need to give adequate consideration to potential ground heave and any hydrostatic pressure, if present, that may occur.

5.9. The BIA discusses that further information will be used to finalise the design of the substructure. The details of the nature of this information is to be provided.

5.10. A ground movement assessment will be required to demonstrate the stability of the highway and neighbouring buildings due to the front lightwell construction. The results of the assessment are to validate the assumption, relating to the Damage Category, made in the BIA.

5.11. An outline movement monitoring strategy relating to the existing neighbouring structures has been proposed. This should be implemented.

5.12. The BIA confirmed that there will be no increase in surface water discharge due to development proposals and this is accepted.

5.13. The BIA confirmed that no trees will be felled and these do not affect the development proposals. It is noted that no information has been provided on trees and their proximity to foundations

5.14. Given the above it cannot be confirmed that the proposal conforms to the requirements of CPG Basements. A number of requests for additional information is provided in appendix 2 of this audit.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Borgeaud	Unknown	29.06.2018	Concerns have been raised in relation to the BIA flood risk assessment.	1. The BIA makes reference to a map from the Environment Agency indicating the areas is in low risk from surface water flooding.
Saynor	Unknown	29.06.2018	It is claimed that damage has already been caused to a neighbouring property. The resident claims the soil is wet just below ground floor, suggesting a potential for a high water table in winder. The resident expresses concerns in relation to the risk to neighbouring buildings due to basement proposals.	2. A GMA has been requested of the applicant to confirm Damage Category and anticipated movements. Trial pit investigation has been requested of the applicant to ascertain soil and groundwater conditions on site.
Eastwood	Unknown	18.06.2018	The resident raised concerns relating to the water table, suggesting this may be high relative to ground level. Reference is made to the Westbourne River, which may impact on surface flooding. The resident claims that the neighbouring basement at no. 29 Kylemore Road flooded numerous times.	3. See response nr. 2 The BIA confirmed the river is unlikely to impact on the proposed development.
Atlas	Unknown	27.06.2018.	The resident claims that the scheme poses a risk of damage to neighbouring properties. The resident expresses concerns that trial pit investigation has not been carried out and the groundwater levels not established.	4. See response no. 2

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Stability	Ground Movement Assessment relating to the construction of the front lightwill will be required	Open	
3	Stability	Trial pit investigation will be required to ascertain thickness of made ground, general site conditions and level of Party Wall foundations.	Open	
4	Stability	Clarification is required on the sequence of the proposed underpinning, maximum width of underpinned section and methodology (i.e. hit and miss).	Open	
6	Qualifications	The BIA author/reviewed to confirm their qualifications are GSD compliant	Open	
7	Stability	Clarification is required on the structural design of the front lightwell. The design assumption, in relation to the retaining wall being propped at the top, does not accord with the structural drawings.	Open	

Appendix 3: Supplementary Supporting Documents

None

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