CampbellReith
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23 Healey Street
LONDON, NW1 8SR

Basement Impact Assessment
Audit

For

London Borough of Camden

Project Number: 12727-23

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 (BIA) submitted as part of the Planning Submission documentation for 23 Healey Street (planning reference 2017/5604/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 existing property is located at 23 Healey Street and comprises a three storey Victorian mid-terraced building with front and rear gardens. The house is attached to 21 and 25 Healey Street to the north and to the south respectively.

1.5. The proposed development comprises the demolition of the existing single storey rear extension and the erection of two storey rear extension with the construction of a new basement below it.

1.6. The Basement Impact Assessment (BIA) has been carried out by PCDS Building and Structural Design Consultants. The BIA authors should demonstrate compliance with LBC policy requirements.

1.7. The methodology used to assess the impact of the proposed development is not in accordance with LBC's policy requirements. The format of the BIA should be reviewed to clearly address the impacts that may be caused by the proposed basement on the nearby environment following the CPG4 criteria i.e. Screening, Scoping, Site Investigation, Impact Assessment, including requirements for mitigation where identified. Reference documents to evidence assessment should be provided.

1.8. The BIA should address potential impacts to stability, hydrogeology and hydrology, via the process described in CPG4 and Policy A5 Basements, as 1.7.

1.9. A site specific ground investigation is required to inform the retaining wall and foundation design.

1.10. It is proposed to construct the basement utilising underpinning. Structural drawings including temporary works plans are provided. An outline construction programme should be provided.

1.11. A ground movement assessment should be undertaken to determine damage impacts to neighbouring buildings and infrastructure. The presence of any sensitive infrastructure should be identified in the BIA

1.12. It is understood that a tree will be removed as part of the proposed development. This should be clarified in the BIA, along with any potential impacts.

1.13. It is accepted that there is a low risk of flooding from rivers or seas. Flooding from other sources has not been assessed.

1.14. Queries and requests for information are described in Section 4 and summarised in Appendix 2. The BIA does not meet the criteria of CPG4.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 06/12/2017 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 23 Healey Street, London NW1 8SR (Reference: 2017/5604/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 (CPG) 4: Basements and Lightwells.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.
- Local Plan(2017): 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;

2.5. 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.

2.6. LBC's Audit Instruction described the planning proposal as *"Excavation and extension of existing basement including formation of front lightwell."*

2.7. The Audit Instruction also confirmed that the proposal does not involve any listed building.

2.8. CampbellReith accessed LBC's Planning Portal on 11/12/2017 and gained access to the following relevant documents for audit purposes:

- Design and Access Planning Statement by PCDS Building and Structural Design Consultants (Ref. 3356) dated October 2017.
- Engineer's Report by PCDS Building and Structural Design Consultants (Ref. 3356) dated October 2017.
- Architects General Arrangement Plans & Sections, Existing and Proposed:
  - 1 No. Existing elevations, site plan and roof plan;
  - 1 No. Existing floor plan;
  - 1 No. Proposed elevations, site plan and roof plan;
  - 1 No. Proposed floor plans.
- Planning Comments and Responses.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	The qualifications, accreditations and experience should be presented as requested by CPG4, Section 3.6.
Is data required by Cl.233 of the GSD presented?	No	Impacts on soils, water quality, hydrology along with mitigation measures for such issues, should be provided. Nature and scale of the impacts (short, medium and long-term, permanent and temporary, positive and negative) along with the extent of the impacted area should be provided. Mitigation measures, if any, for the proposed development should be presented.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	No	Information is totally or partially missing. For instance, the hydrology of the area as well as land stability is not addressed in the document.
Are suitable plan/maps included?	No	An OS plan indicating the site is provided. Suitable maps indicating hydrology, hydrogeology, land stability and history of the site should be provided in the BIA.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	No	See above.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	Slope stability screening is not presented.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	Hydrogeology screening is not presented.
Hydrology Screening: Have appropriate data sources been consulted?	No	Hydrology screening is not presented.

Item	Yes/No/NA	Comment
Is justification provided for 'No' answers?		
Is a conceptual model presented?	No	A conceptual model is not presented.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	Land stability scoping is not presented.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	No	Hydrogeology scoping is not provided.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	Hydrology scoping is not provided.
Is factual ground investigation data provided?	No	Historic ground investigation is presented plus 3no site specific trial pits. However, information regarding soils description depth indications, coordinates of the exploratory holes is missing or incomplete. Site specific information should be provided for assessment / design purposes. The location of the historic information and relevance to the site should be provided.
Is monitoring data presented?	No	Monitoring data is not presented.
Is the ground investigation informed by a desk study?	No	No. Site specific investigation is limited.
Has a site walkover been undertaken?	Yes	Design and Access Statement provides site information.
Is the presence/absence of adjacent or nearby basements confirmed?	No	The BIA has not confirmed the presence/absence of any nearby basement.
Is a geotechnical interpretation presented?	No	The geotechnical parameters have been assumed referring to historical information. Site specific information should be presented and assessed.

Item	Yes/No/NA	Comment
Does the geotechnical interpretation include information on retaining wall design?	No	Geotechnical interpretation is not presented.
Are reports on other investigations required by screening and scoping presented?	No	Screening and scoping are not presented.
Are the baseline conditions described, based on the GSD?	No	Information about baseline conditions (hydrology, hydrogeology, land stability, topography, infrastructures, utilities etc.) is missing.
Do the base line conditions consider adjacent or nearby basements?	No	No information for the adjacent or nearby basements.
Is an Impact Assessment provided?	No	The Impact Assessment is not provided.
Are estimates of ground movement and structural impact presented?	No	The BIA states damage impacts are expected to be Negligible to Very Slight, but no basis of assessment has been presented.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	No	The Impact assessment is not presented.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	Mitigation methods should be presented systematically after the completion of the screening, scoping and impact processes.
Has the need for monitoring during construction been considered?	No	A movement monitoring strategy with suitable trigger values should be presented, based on a completed GMA.
Have the residual (after mitigation) impacts been clearly identified?	No	Residual impacts should be presented after the application of suitable measures to mitigate the original impacts.
Has the scheme demonstrated that the structural stability of the	No	Insufficient assessment.

Item	Yes/No/NA	Comment
building and neighbouring properties and infrastructure will be maintained?		
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	Insufficient assessment.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	Insufficient assessment.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	The BIA states damage impacts are expected to be Negligible to Very Slight, but no basis of assessment has been presented.
Are non-technical summaries provided?	No	

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by PCDS Building and Structural Design Consultants. The BIA authors should demonstrate compliance with LBC policy requirements, namely CPG4 Section 3.6.

4.2. The existing property is located at 23 Healey Street and comprises a three storey Victorian mid-terraced building with front and rear gardens. The house is attached to 21 and 25 Healey Street to the north and to the south respectively.

4.3. The proposed development comprises the demolition of the existing single storey rear extension and the erection of two storey rear extension with the construction of a new basement below it.

4.4. It is intended to underpin both the existing party walls and the main rear wall of the house to a level of approximately 2.7m below ground level (bgl). A maximum depth of excavation should be clearly stated for the purposes of impact assessment.

4.5. The methodology used to assess the impact of the proposed development does not follow the approach set out in CPG4 or the Guidance for Subterranean Development (GSD), and is not in accordance with relevant policy requirements. The format of the BIA should be reviewed to clearly address the impacts that may be caused by the proposed basement on the nearby environment, following the CPG4 criteria i.e. Screening, Scoping, Site Investigation, Impact Assessment, including requirements for mitigation where identified.

4.6. The BIA should address potential impacts to stability, hydrogeology and hydrology, via the process described in CPG4 and Policy A5 Basements.

4.7. Reference documents to evidence assessment should be provided. Baseline information should be provided in a Desk Study compliant with the GSD Appendix G1.

4.8. Historic borehole logs are provided, although there locations and relevance / proximity to the site is not stated. Site specific site investigation in accordance with the GSD Appendix G2 should be provided, along with geotechnical interpretation as Appendix G3. A conceptual model, showing the proposed changes to the site in the context of the ground and groundwater conditions and highlighting any impacts, risks or mitigation measures should be presented.

4.9. A site specific ground investigation was performed by PCDS in September 2017, consisting of three trial pits. The information regarding soils description, depth indications, and coordinates of the exploratory holes is missing or incomplete, such that a geotechnical interpretation of the ground conditions at the site is not possible. Existing foundation depths have been established.

4.10. Groundwater was not intercepted during the ground investigation. However, as hydrogeological processes are subject to seasonal influence, groundwater monitoring should be undertaken to record any changes from the original conditions and to inform the conceptual model.

4.11. On page 5 of the Engineer's Report it states: '*The design of the basement will include for any potential ground water up to within 1 meter of the ground level […]*" whilst the Structural Design Calculations reports, '*It is assumed water level may rise to 2.0 meters above base level […]'*. This should be clarified.

4.12. Structural designs and drawings are presented to demonstrate the viability of the proposed construction. These include outline structural calculations for the retaining walls with consideration of allowable bearing pressure. A propping system along with the detail of the excavation is presented in the sequence of construction. An outline construction programme should be provided.

4.13. All the parameters considered for the analyses of the retaining wall are presented, with a statement: '*Ground conditions will be checked by trial holes, but for this design they are assumed to be similar to borehole records in the vicinity, held by the BGS*'. As 4.7, additional information for these logs is required, and no insitu test results are presented. A site specific ground investigation with insitu testing is required as the basis of retaining wall and foundations.

4.14. The retaining wall design values for Made Ground and London Clay currently adopted are considered to be optimistic.

4.15. The BIA states: '*[…] previous experience suggests there will be very little ground movement in response to the proposed basement extension and any damage to the neighbouring property will be in the negligible to very slight category*'. However, a ground movement assessment should be undertaken to determine damage categories for the neighbouring buildings and to inform the structural monitoring strategy. Underground infrastructure and utilities within the vicinity of the works should be identified and impacts assessed, as relevant.

4.16. It is understood that a tree will be removed as part of the proposed development. This should be clarified in the BIA.

4.17. It is accepted that there is a low risk of flooding from rivers or seas. Flooding from other sources has not been assessed.

4.18. Queries and matters requiring further information or clarification are summarised in Appendix 2.

5.0 CONCLUSIONS

5.1. The BIA authors should demonstrate compliance with CPG4, Section 3.6.

5.2. The format of the BIA should be revised to present structured assessment, as outlined in the Guidance for Subterranean Development (GSD) and CPG4. The BIA should address potential impacts to stability, hydrogeology and hydrology.

5.3. A Desk Study in accordance with the GSD Appendix G1 should be presented to evidence the Screening process.

5.4. Site specific ground investigation undertaken in accordance with the GSD Appendix G2, with geotechnical interpretation in accordance with Appendix G3, should be provided, to inform a conceptual site model and the basis of design / assessment.

5.5. The site investigation information is missing or incomplete, such that a geotechnical interpretation of the ground conditions at the site is not possible. Given the absence of reliable information, the interpretation of the parameters assumed in the structural calculations is considered too optimistic.

5.6. Structural drawings including temporary works plans are provided. An outline construction programme should be provided.

5.7. A ground movement assessment should be undertaken to determine damage impacts to neighbouring buildings and infrastructure and inform a structural monitoring strategy. The presence of any sensitive infrastructure / utilities should be identified and impacts assessed, as applicable.

5.8. It is understood that a tree will be removed as part of the proposed development. This should be clarified in the BIA, along with any potential impacts.

5.9. It is accepted that there is a low risk of flooding from rivers or seas. Flooding from other sources has not been assessed.

5.10. Impact assessments, proposed mitigation and likely residual impacts should be presented in order to demonstrate that the proposed development is compliant with LBC policies.

5.11. Queries and matters requiring further information or clarification are summarised in Appendix 2. The BIA does not meet the criteria of CPG4.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Ross M	21 Healey Street	07/11/2017	Structural concerns	Section 4
Lake B	9 Healey Street	-	Structural concerns	Section 4

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Appendix 2: Audit Query Tracker

23 Healey Street, NW1 8SR
BIA – Audit

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA format	BIA authors to demonstrate compliance with CPG4, 3.6	Open	
2	BIA format	GSD / CPG4 methodology to be adopted to assess land stability, hydrology and hydrogeology	Open	
3	Screening	Screening / Scoping assessments to be completed evidenced by a Desk Study as GSD, G1	Open	
4	Stability	Appropriate site specific investigation and geotechnical interpretation to be presented, as GSD G2, G3	Open	
6	Stability	Underground infrastructure / utilities within the zone of impact should be identified and assessed, as applicable	Open	
7	Stability	The removal of a tree as part of the development should be confirmed in the BIA, and any impacts assessed.	Open	
8	Stability	A ground movement assessment and damage impact assessment should be provided, along with a relevant outline monitoring strategy.	Open	
9	Hydrology	Flood risk assessment should assess risk / impacts from all sources of flooding	Open	

Appendix 3: Supporting Information