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Basement Impact Assessment
Audit

For

London Borough of Camden

Project Number: 13398-11
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Appendix

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 205 Albany Street London NW1 4AB (planning reference 2021/1852/P and 2021/2486/L). 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 was prepared by QED Structures and supported by a site investigation report by ASLThe qualifications of the authors are not as per CPG Basements, however it is acknowledged that the screening and scoping have correctly identified the potential basement impacts.

1.5. It is proposed to deepen and extend the existing lower ground floor and pavement vaults. The BIA has confirmed that the basement will be founded within London Clay. It is likely that significant groundwater will not be encountered during basement foundation excavation.

1.6. Mass concrete underpinning is proposed to increase founding depths to the existing lower ground floor and pavement vaults. Reinforced concrete underpins will be constructed to form the rear extension of the basement

1.7. It is accepted that the development will not impact on slope stability or the hydrology and hydrogeology of the area.

1.8. The BIA identifies potential impacts to the host and neighbouring structures and infrastructure, A Ground Movement assessment is provided in the BIA and the damage to the host property is noted to be within Category 1 of the Burland scale. However, further information is required to support this conclusion.

1.9. Estimates of ground movements and damage to nearby infrastructure and neighbouring properties should be provided with supporting information.

1.10. A monitoring strategy is presented, however, suggested trigger levels should be reviewed against the updated GMA to ensure that damage will be limited to Burland Category 1.

1.11. It cannot be confirmed that the BIA complies with the requirements of CPG: Basements until the queries raised in Section 4 and Appendix 2 are addressed.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 27/07/2021 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 205 Albany Street London, NW1 4AB and Planning Reference No. 2021/1852/P and 2021/2486/L.

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 *"Extend existing basement (lower ground floor) to rear to create additional internal space and a lightwell; erection of single storey rear extension above extended basement at ground floor level within existing courtyard and creation of glass bridge over new lightwell; lower floor levels within existing basement and front vaults; doors to vaults to be fixed shut; creation of openings between vaults; replace external door within front lightwell; insertion of new first floor window on rear elevation; increase in height of existing rear wall; removal and replacement of existing roof hatch and insertion of 3x new skylights on mansard roof; internal alterations at all levels".*

The description provided above is from planning application no. 2021/2486/L. It is essentially the same as that given for planning application reference 2021/1852/P except for a slight rewording of the proposal.

The Audit Instruction confirmed 205 Albany Street and its neighbours are listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal on 03/08/2021 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA) by QED Structures, dated March 2021.
- Site Investigation report by ASL, dated March 2021.
- Architects General Arrangement Plans & Sections Existing and Proposed by Belsize Architects dated June 2020.
- Design & Access Statement by Belsize Architects, dated April 2020.
- Heritage Statement by Authentic Futures, dated April 2021.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	
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	Section 7.2 of the BIA
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?	Yes	Section 4.2 of the BIA
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 4.1 of the BIA.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	Section 4.3 of the BIA Question 3 of the BIA need clarification with regards to paved surfaces.
Is a conceptual model presented?	No	However the relationship between the basement, its surroundings and ground/groundwater conditions is explained.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	

Item	Yes/No/NA	Comment
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	Question 3 needs clarification.
Is factual ground investigation data provided?	Yes	Section 6.1.2.1 of the BIA
Is monitoring data presented?	Yes	Table IVa in Appendix IV of the Site Investigation Report by ASL.
Is the ground investigation informed by a desk study?	Yes	Section 3 of the BIA
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	The Ground Movement Assessment notes that the adjacent properties are likely to have lower ground floors similar to those at the host property.
Is a geotechnical interpretation presented?	Yes	Section 7.1 of the BIA
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 7.1 of the BIA; Same properties used in retaining wall analysis.
Are reports on other investigations required by screening and scoping presented?	NA	None required.
Are the baseline conditions described, based on the GSD?	Yes	Section 6.1 of the BIA
Do the baseline conditions consider adjacent or nearby basements?	No	
Is an Impact Assessment provided?	Yes	Section 8 of the BIA
Are estimates of ground movement and structural impact presented?	Yes	Section 8.2.2 of the BIA

Item	Yes/No/NA	Comment
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	Sections 8 of the BIA. Does not consider impact on neighbouring buildings and nearby infrastructure.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Section 7.2 of the BIA
Has the need for monitoring during construction been considered?	Yes	Section 7.4 of the BIA
Have the residual (after mitigation) impacts been clearly identified?	No	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	The information provided demonstrates no change to hard surfaced/paved areas.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	Further justification required.
Are non-technical summaries provided?	Yes	Section 1 of the BIA

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) and Structural Strategy Report (SSR) have been prepared by engineering consultants QED Structures, with the support of ASL. The individuals concerned in its production do not have suitable qualifications. The reviewer is a chartered structural engineer but no proof of expertise in engineering geology, hydrology and land stability has been provided as per CPG Basements. However, the authors have presented the information clearly and identified the impacts appropriately. Appendix 10.11 is not present in the BIA with the relevant CV of the author and reviewer.

4.2. The LBC Instruction to proceed with the audit identified that the basement proposal either involved a listed building or was adjacent to listed buildings but gave no details. The Design & Access Statement identified that 205 Albany Street is located within Regents Park Conservation Area and is part of a group of Grade II listed buildings, together with 197-211 Albany Street and with the attached railings.

4.3. The property is a four storey terraced dwelling with an existing basement. The proposed works consists of extending the length of the basement at the rear by around 2m, to create space for a new lightwell and two bathrooms. The existing basement floor and the pavement vaults present at the front of house are to be lowered. The extension would involve excavations of approximately 3m depth and the construction of reinforced concrete retaining walls under the existing walls of the building outriggers and the existing external courtyard. The existing foundations will be deepened with mass concrete underpins.

4.4. The BIA's table of contents has a numbering error. The numbering for headers in the table of contents begins at 2, whereas the rest of the headings throughout the document begin at 1. The error is repeated in several paragraphs where references to sections are made. The references to sections of the BIA in this audit correspond to the document body headers.

4.5. A site investigation is carried by ASL in the rear courtyard of the property to a depth of 10.45m. It has identified made ground to a depth of 2.20m, followed by firm to stiff London Clay. Groundwater was not encountered during the fieldwork or a subsequent round of monitoring. The BIA identifies existing lower ground floor has founding levels ranging from 400mm to 540mm below ground level, while the founding levels of the vault range from 400mm to 600mm bgl.

4.6. Figure 3 of the ASL has a Contamination Conceptual Model rather than a Conceptual Ground Model. However, it is accepted that the BIA clearly describes the relationship between the proposed and existing structures, as well as ground and groundwater conditions.

4.7. It is accepted that the proposed development would not have any impact on hydrogeology, surface water and flooding from the described construction methodology and drawings provided. However, Question 3 of the surface water and flooding screening states 'Yes' to change in hard surfaced/paved areas, although this is not the case based on the drawings and construction methodology.

4.8. A comprehensive construction methodology defining the permanent and temporary works is outlined in Section 7.2. The deepening of the existing lower ground floor and creation of the new basement is to be achieved by means of traditional hit and miss underpinning techniques. Underpinning of the vaults is 750mm deep and a temporary support is provided to limit any ground movements. Underpinning of existing walls is to be 380mm and the construction of new basement area to the rear employs a reinforced concrete retaining wall to a depth of 3m, formed using a hit and miss underpinning type methodology. Temporary propping and backfilling of excavations are described to mitigate ground movements.

4.9. Appendix 10.5 contains a reinforced concrete retaining wall design supported by a structural load takedown and a construction method statement. The ground conditions for the reinforced concrete retaining wall design are consistent with the one provided in the BIA.

4.10. A Ground Movement Assessment is provided and considers the new retaining wall construction. The GMA states the proposed development is a "top-down excavation", this appears to be contradictory to the construction methodology in Section 7.2.4 which presents a bottom-up sequence, however, it is acknowledged that for the new basement, the retaining wall is propped at high level in the temporary case. The methodology provided in Section 8.2.2 consults the appropriate empirical curves from CIRIA C760, for the ground conditions present onsite. Whilst CIRIA C760 is intended for use with piled retaining walls, it is accepted that ground movement predicted by reference to this publication can be within the range commonly accepted for underpinned retaining walls.

4.11. The GMA states the ground movement is in the range of 3mm to 6mm and assumes horizontal movement is equal to vertical movement due to excavations in front of the wall. The damage assessment identifies the ground movements associated with the deepening of the existing lower ground floor are negligible. Further information is required to justify the range of movement predicted. Additionally ground movements associated with the pavement vault lowering should be presented with confirmation that construction related movements have been considered in all cases.

4.12. The Building Damage Assessment provided in Section 7.2.3 considers control of ground movements by supporting existing walls and minimising excavations beyond supports. A damage assessment for the existing building resulting from the full depth basement excavation is presented in Figure 5 but no relevant calculations are provided to support the conclusion that

the expected damage to the existing building will be within the 'very slight' category of the Burland scale. Additionally the GMA should provide predictions of damage for all potentially affected structures and infrastructure.

4.13. Section 7.4 of the BIA specifies a monitoring regime with a green/amber trigger level for 6mm movements. However, the monitoring regime should be reviewed once the GMA has been updated to ensure that damage can be limited to Burland Category 1.

5.0 CONCLUSIONS

5.1. The BIA author's qualifications do not meet the requirements of CPG Basements.

5.2. The BIA has confirmed that the proposed basement will be of single storey, built within London Clay.

5.3. It is likely that significant groundwater will not be encountered during basement foundation excavation.

5.4. There will be mass concrete underpinning to accommodate the increase in differential founding depths in the existing lower ground floor and pavement vaults. Reinforced concrete underpins are to be constructed to support the rear extension of the basement.

5.5. It is accepted that there are no impacts to surface water or subterranean flows.

5.6. There is the potential for damage to structures and infrastructure. The GMA notes likely ground movements are to be in range of 3mm to 6mm, however, calculations are required to support the estimated ground movements and estimates should be presented for the underpinning to the lower ground floor and pavement vaults.

5.7. The GMA states the damage to be within Category 1 to the existing building but does not provide calculations to justify this conclusion.

5.8. The GMA and damage assessment needs to be reviewed to address potential impacts on nearby infrastructure and neighbouring properties. The predicted damage category should be confirmed with relevant calculations and the GMA reviewed to address the comments in the discussion.

5.9. A monitoring strategy is presented, however, suggested trigger levels should be reviewed against the updated GMA to ensure that damage will be limited to Burland Category 1.

5.10. It is accepted that the surrounding slopes to the development site are stable.

5.11. It cannot be confirmed that the BIA complies with the requirements of CPG: Basements until the queries raised in Section 4 and Appendix 2 are addressed.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Stability	GMA needs to address potential impacts on infrastructure and neighbouring properties.	Open	
2	Stability	GMA needs to provide calculations to justify predicted damage category.	Open	
3	Stability	Movement monitoring strategy should be reviewed with updated GMA to ensure damage limited to Burland Category 1.	Open	

Appendix 3: Supplementary Supporting Documents

None

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