CampbellReith
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Flat A 19 Camden Park Road, London NW1 9AX

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 13398-59
Revision: D1

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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 Flat A 19 Camden Park Road, London NW1 9AX (planning reference 2019/1458/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 individuals who possess suitable qualifications.

1.5. It is proposed to construct the basement using underpinning techniques, however the construction method proposed should be presented consistently.

1.6. The proposed basement will be founded within London Clay and significant groundwater flow is unlikely to be encountered during basement foundation excavation.

1.7. Soil parameters for retaining wall design should be provided.

1.8. It is accepted that the development will not impact the hydrogeology or slope stability of the area.

1.9. Further detail is required regarding the attenuation measures proposed.

1.10. Further clarification of the use of a heel in the retaining wall design is required.

1.11. A ground movement assessment, potential structural impact and mitigation measures, if required, in accordance with CPG Basements, are not included in the BIA and are requested.

1.12. Utility data should be provided.

1.13. A Structural Monitoring Plan is provided and should be revised in line with the findings of the ground movement assessment.

1.14. 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 2 November 2020 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for Flat A 19 Camden Park Road, London NW1 9AX.

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: Basements. March 2018
- 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 *"Erection of a single storey rear extension to the lower ground floor flat."*

2.6. The Audit Instruction confirmed that the site neither involves, nor is a neighbour to, listed buildings.

2.7. CampbellReith accessed LBC's Planning Portal on 23 October 2020 and gained access to the following relevant documents for audit purposes:

- Desk Study & Preliminary Basement Impact Assessment (Screening & Scoping) Report by Jomas Associates Ltd, ref. P1675J1537/SRC, version 1.1, dated 15 November 2019.

- Ground Investigation and Basement Impact Assessment Report by Jomas Associates Ltd, ref. P1675J1537/SRC, version 1.1, dated 1 October 2020.
- Construction Method Statement by Mint Structures, ref. M19128/LS, revision B, dated October 2020.
- Design and Access Statement by Jas Bhalla Architects, dated December 2018.
- Planning application drawings by Jas Bhalla Architects, comprising a site plan, location plan, existing and proposed plans and elevations (all dated 20/12/18), existing and proposed Sections A and B (rev A, dated 20/12/18) and Section C (rev B, dated 13/05/19).

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	
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	
Are suitable plan/maps included?	Yes	In the Appendices of the Preliminary BIA
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	
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Is a conceptual model presented?	Yes	
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	However, further detail of the attenuation measures to be used is required.
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	No	No post-ground investigation groundwater monitoring has been undertaken.
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Adjoining properties observed to also have lower ground levels.
Is a geotechnical interpretation presented?	No	
Does the geotechnical interpretation include information on retaining wall design?	No	BIA presents a summary of in situ and lab data in Table 5.1.
Are reports on other investigations required by screening and scoping presented?	No	BIA recommends that a tree survey be undertaken.
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	No	A Ground Movement Assessment (GMA), structural impact assessment and mitigation measures, if required, have not been

Item	Yes/No/NA	Comment
		undertaken and are requested.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	As above
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	As above
Has the need for monitoring during construction been considered?	Yes	However this should be revised on completion of a GMA.
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	However further detail regarding the recommended attenuation should be provided.
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	However no calculations or assessment is provided to support this conclusion.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by individuals who have suitable qualifications.

4.2. The LBC Instruction to proceed with the audit identified that the basement proposal neither involves a listed building, nor is adjacent to listed buildings. The Design & Access Statement (DAS) indicates the site is within the Camden Square Conservation Area.

4.3. The proposed basement consists of a single storey extension of the existing lower ground floor level of the property. The extension is the full width of the property and extends c. 1m further into the rear garden from the existing lower ground floor level. It is proposed to construct a garden area at lower ground floor level, which is proposed to extend a further 4m into the rear garden from the rear wall of the new extension. It is proposed to form the basement using underpinning techniques, and the maximum excavation depth is given as 1.50m.

4.4. A site investigation was undertaken in the rear garden of the property and indicates ground conditions comprise Made Ground with London Clay below. Made Ground was encountered to a depth of 0.45m from lower ground floor level. Deeper Made Ground was encountered in TP3 to at least 1.2m depth. This location was carried out at garden level adjacent to the existing house and garden wall.

4.5. The BIA does not provide soil parameters for the London Clay, although a summary of in situ and laboratory testing is provided in Table 5.1. Soil parameters for retaining wall design should be provided based on the site specific ground investigation data, and used consistently in associated retaining wall calculations.

4.6. The London Clay Formation has been identified as an “unproductive aquifer” comprising high plasticity clay. No groundwater was encountered during the ground investigation. No post-ground investigation monitoring was carried out, however the BIA indicates that any groundwater encountered during construction may be readily dealt with using conventional pumping. It is accepted that the development will not impact the hydrogeology of the area.

4.7. The BIA indicates that the development will increase the impermeable surface area at the site by 27m^2 and that the site lies within a Critical Drainage Area. Table 4.2 of the Preliminary BIA indicates that SUDS will be required for the site, which is likely to include attenuation before releasing surface water to the existing sewer network. Attenuation of surface water is not referenced in any other drawings or documents for the development. Further detail of the attenuation measures to be used should be provided.

4.8. The BIA recommends that a tree survey be carried out to identify the location, species and height of all trees on and near the development. Photographs on page 8 of the DAS show a tree to be present within the garden of the site or adjacent property. The BIA identifies that the London Clay has a high volume change potential and that foundations and heave protection requirements should be designed in accordance with NHBC guidelines.

4.9. The BIA confirms that the site and surrounding area do not contain significant slopes and that the development will not increase the slopes at the site. As such it is accepted that the proposed development will not impact the slope stability of the surrounding area.

4.10. The Construction Method Statement (CMS) indicates that the underpinning will adopt a 'hit and miss' sequence of installation, with bays not exceeding 1m wide, and an indicative underpinning sequence is presented in the appended drawing TW1. The excavation at the rear of the proposed basement, adjacent to the garden of the property, will be constructed as one single bay.

4.11. The CMS indicates that excavations deeper than 1.2m will be shored at all times and that the excavation face will be lined with a permanent sacrificial shuttering. It is indicated that a central earth mass will be retained during underpinning to enable local shoring of pins as underpinning progresses.

4.12. Section 6.5.3 of the BIA states *"It is recommended that the site is supported by piled walls during construction with a basement box construction inside the piles. This will ensure that the adjacent land is adequately supported in the temporary and permanent construction"*. This contradicts the construction sequence provided in the CMS, which indicates that a traditional underpinning system will be used. The construction method should be presented consistently in all documents.

4.13. Structural calculations provided in the CMS assume a retaining wall height of 1.5m, of which 0.45m is the base element of the wall. Drawing TW1, presented in the appendix of the CMS, suggests a heel will be included in the retaining wall design, however this is not shown in drawing TW2. The structural calculations for the retaining wall include a 150mm long heel in the design. Further clarification of the use of a heel should be provided, including how stability will be maintained where the heel extends into neighbouring land. The retaining wall section should be presented consistently.

4.14. Section 6 of the BIA discusses ground movements associated with the development, with reference to CIRIA C580. Although CIRIA C580 has been superseded by CIRIA C760, it is acknowledged that the information referenced with respect to damage category is the same in both documents.

4.15. A ground movement assessment, potential structural impact and mitigation measures, if required, in accordance with CPG Basements, are not included in the BIA and are requested. Section 6.5.2 of the BIA states *"Unavoidable lateral ground movements associated with the basement excavations must be controlled during temporary and permanent works so as not to impact adversely on the stability of the surrounding ground and any associated services and structures".* Structures and services that may be affected by these ground movements should be clearly identified and potential impacts assessed. Utility data should be provided.

4.16. Section 6.6.2 of the BIA suggests that it is generally good practise to limit damage to Category 2 (Slight). It should be noted that LBC policy requires damage to buildings to be limited to Category 1 (Very Slight) for basement developments. The BIA states that *"using an underpinning methodology it is considered that in the short term maintaining the category of damage to Category 1 could be relatively easily achieved".* Further information is required to support this statement, and the subsequent discussion regarding long term movement.

4.17. The BIA recommends that an inspection of the property should be undertaken prior to starting works, and a watching brief and monitoring of the building be undertaken during construction. A Suggested Structural Monitoring Plan is presented within the CMS and provides recommended trigger levels for movement monitoring. The trigger level values should be informed by the ground movement assessment.

5.0 CONCLUSIONS

5.1. The BIA has been carried out by individuals who possess suitable qualifications.

5.2. It is proposed to construct the basement using underpinning techniques in a 'hit and miss' sequence, however the BIA also references the use of piles. The construction method should be presented consistently.

5.3. The BIA has confirmed that the proposed basement will be founded within London Clay and that groundwater is unlikely to be encountered during basement foundation excavation.

5.4. Soil parameters for retaining wall design should be provided based on the site specific ground investigation data, and used consistently in subsequent retaining wall calculations.

5.5. It is accepted that the development will not impact the hydrogeology or slope stability of the area.

5.6. Further detail is required regarding the attenuation measures to be used to mitigate the increase of impermeable area resulting from the development.

5.7. Further clarification of the use of a heel in the retaining wall design is required.

5.8. A ground movement assessment, potential structural impact and mitigation measures, if required, are not included in the BIA and are requested.

5.9. The BIA recommends that an inspection of the property should be undertaken prior to starting works, and a watching brief and monitoring of the building be undertaken during construction. The CMS presents a Suggested Structural Monitoring Plan and the trigger level values proposed should be informed by the ground movement assessment.

5.10. 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

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Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Stability	Soil parameters for retaining wall design should be provided based on the site specific ground investigation data, and used consistently in associated retaining wall calculations.	Open	
2	Hydrology	Further detail of the attenuation measures to be used should be provided.	Open	
3	Stability	The construction method proposed should be presented consistently.	Open	
4	Stability	Further clarification of the use of a retaining wall heel should be provided.	Open	
5	Stability	A ground movement assessment, potential structural impact and mitigation measures, if required, are not included in the BIA and are requested.	Open	
6	Stability	The trigger values for the movement monitoring strategy should be informed by the ground movement assessment once completed.	Open	
7	Stability	Utility data should be provided.	Open	

Appendix 3: Supplementary Supporting Documents

None

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