

12 Keats Grove
London, NW3 2RN

Basement Impact Assessment
Audit

For
London Borough of Camden

Project Number: 13398-51

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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 12 Keats Grove, London, NW3 2RN (planning reference 2020/3584/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 (BIA) 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 checklist. Additional information was provided by applicant's engineers.
- 1.4. The BIA has been carried out by individuals with suitable qualifications.
- 1.5. The site is irregularly shaped and is occupied by a Grade II listed three-storey detached villa. The proposed development includes lowering of the existing floor slab of the main building by 0.38m and demolishing and rebuilding the house's eastern wing. A basement is proposed below the eastern wing to c.2.60m depth below the existing ground level. Outline construction methodology, construction sequence and drawings, preliminary calculations were presented.
- 1.6. The BIA included screening and scoping sections for land stability, hydrogeology and hydrology, supported by a desk study and a site walkover. A site-specific intrusive ground investigation was undertaken.
- 1.7. Any groundwater inflows during construction are expected to be minor; a contingency plan is proposed by the BIA.
- 1.8. The proposed development is not anticipated to impact the hydrogeological environment or the hydrology of the site.
- 1.9. The potential damage to the on-site and neighbouring structures is anticipated to be negligible.
- 1.10. As proposed in the BIA, a monitoring strategy shall be agreed prior to construction commencing.
- 1.11. Historic England and LBC may have to be consulted with regard to the proposed repair of the boundary wall towards 12B Keats Grove, given the Grade II listed status of the on-site structure.
- 1.12. It can be confirmed that the proposal adheres to the requirements of the CPG Basements.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 23 September 2020 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 12 Keats Grove, London, NW3 2RN (planning reference 2020/3584/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: 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 "*Variation of conditions 2 (approved plans) and 8 (basement) of planning permission ref 2019/5443/P dated 26/02/2020 for 'Erection of single storey plus basement side extension including excavation (following demolition of existing garage extension)'. Namely to vary the side basement height and create front lightwell. Fenestration alterations to ground floor side extension*".

The Audit Instruction confirmed that the property is a Grade II listed building.

- 2.6. CampbellReith had previously audited BIA reports for the same site but for a slightly different scheme (planning reference 2019/5443/P). This audit considers the updated reports submitted for the current proposal but refers to the previous planning permission documents as needed.
- 2.7. CampbellReith accessed LBC's Planning Portal on 30 September & 26 October 2020 and gained access to the following relevant documents for audit purposes:
- "Ground Investigation and Basement Impact Assessment Report" (Geotechnical BIA report), dated 6 August 2020, issue 4, issued by Geotechnical & Environmental Associates (GEA) Ltd;
 - "Structural Engineer's Basement Impact Assessment" (Structural BIA report), dated August 2020, v.6, issued by Price & Myers;
 - "Design and Access Statement", dated August 2020, issued by Milk Studio + MDA;
 - Planning application drawings dated August 2020, issued by Milk Studio + MDA, consisting of:
 - Existing & Proposed Site Plan;
 - Existing & Proposed Lower Ground Floor Plan;
 - Existing & Proposed Front Elevation (South);
 - Existing & Proposed Rear Elevation (North);
 - Existing & Proposed Section A-A – Through Kitchen Extension;
 - Existing and Proposed Upper Ground Floor Plan, Rev. A.
 - Revised planning application drawings, received by LBC on 6 November 2020, issued by Milk Studio + MDA, consisting of:
 - Proposed Lower Ground Floor Plan, Rev.A (lightwell removed);
 - Proposed Upper Ground Floor Plan, Rev.B (lightwell removed);
 - Proposed Section A-A – Through Kitchen Extension, Rev C. (lightwell removed).
 - Planning Comments - none.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes / No / NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Refer to comment in audit paragraph 4.1.
Is data required by Cl.233 of the GSD presented?	Yes	Refer to Geotechnical and Structural BIA reports.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	As above.
Are suitable plan/maps included?	Yes	As above.
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	Refer to Section 3.1.2 of the Geotechnical BIA report.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Refer to Section 3.1.1 of the Geotechnical BIA report.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Refer to Section 3.1.3 of the Geotechnical BIA report.
Is a conceptual model presented?	Yes	Refer to Sections 2.4 and 2.5 of the Geotechnical BIA report.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Refer to Section 4.1 of the Geotechnical BIA report.

Item	Yes / No / NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Refer to Section 4.1 of the Geotechnical BIA report.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	N/A	No potential issues were identified from the screening process.
Is factual ground investigation data provided?	Yes	Refer to Section 5 of the Geotechnical BIA report.
Is monitoring data presented?	Yes	Refer to Section 5.4 of the Geotechnical BIA report.
Is the ground investigation informed by a desk study?	Yes	Refer to Section 2 of the Geotechnical BIA report.
Has a site walkover been undertaken?	Yes	Refer to Sections 1.3 and 2.1 of the Geotechnical BIA report.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Refer to Section 2.1.1 of the Geotechnical BIA report.
Is a geotechnical interpretation presented?	Yes	Refer to Sections 6 to 8 of the Geotechnical BIA report.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Refer to Sections 8.1.2 and 10.2.1 of the Geotechnical BIA report.
Are reports on other investigations required by screening and scoping presented?	Yes	An arboricultural report was presented during the previous planning application (2019/5443/P).
Are the baseline conditions described, based on the GSD?	Yes	Refer to the Geotechnical BIA report.
Do the base line conditions consider adjacent or nearby basements?	Yes	The absence of adjacent basements was discussed in Section 2.1.1 of the Geotechnical BIA report.
Is an Impact Assessment provided?	Yes	Refer to Sections 9 to 11 & 13 of the Geotechnical BIA report and Sections 3 to 5 of the Structural BIA report.

Item	Yes / No / NA	Comment
Are estimates of ground movement and structural impact presented?	Yes	Refer to Sections 10 and 11 of the Geotechnical BIA report.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Refer to the Geotechnical BIA report.
Has the need for monitoring during construction been considered?	Yes	Refer to Section 11.2 of the Geotechnical BIA report.
Have the residual (after mitigation) impacts been clearly identified?	N/A	No residual impacts are anticipated.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Refer to Section 3 of the Structural BIA report.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	Refer to Section 13.2 of the Geotechnical BIA report and Section 3 of the Structural BIA report.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	Refer to Sections 11.1 and 12 of the Geotechnical BIA report.
Are non-technical summaries provided?	Yes	Refer to Section 13.3 of the Geotechnical BIA report.

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out by Geotechnical & Environmental Associates (GEA) Ltd (the Geotechnical BIA report) and by Price & Myers (the Structural BIA report), by individuals with suitable qualifications.
- 4.2. The site is irregularly shaped and is occupied by a three-storey detached villa that includes a lower ground floor, an attic, and single and two-storey wings located on either side. A garden and a driveway exist to the front and a large garden with outbuildings to the rear. The lower ground floor level covers the majority of the building footprint and is located c.500mm lower than the driveway. The existing building is a Grade II listed structure, constructed in the late 1810s.
- 4.3. The proposed development includes lowering of the existing lower ground floor slab of the main building by 0.38m and demolishing and rebuilding the eastern house wing. The new wing will comprise a two-storey structure including a basement level. The proposed wing basement will be c.2.6mm below existing ground level. A 'hit and miss' underpinning technique will be adopted for the construction of the load-bearing structural elements and underpins for the wing basement. The structural proposal indicated one phase of underpin construction. No underpins will be required for lowering the lower ground floor of the main building as the existing foundations will be used. Outline construction methodology, construction sequence drawings and preliminary calculations were presented within Section 5, and Appendices C and D of the Structural BIA report.
- 4.4. The Geotechnical BIA report included screening and scoping sections for land stability, hydrogeology and hydrology, supported by a desk study and a site walkover, as required by CPG Basements.
- 4.5. A site-specific intrusive ground investigation was undertaken comprising four boreholes, up to 15m depth, and two hand-excavated foundation inspection pits, up to 0.60m depth. The ground investigation recorded Made Ground to depths of between 0.40m and 0.80m over (locally in the eastern half of the site only) soft to firm clayey Head deposits to depths of between 2.60m to 4.00m over London Clay; the latter was confirmed to at least 15m depth.
- 4.6. Groundwater was not encountered during the fieldwork. Post-drilling monitoring revealed groundwater rested at 0.10 to 1.70m depth but was assessed to reflect minor seepages from sandy pockets within the Head deposits or rainwater infiltration through the Made Ground, and as such, was not considered representative of a continuous groundwater table. According to the Geotechnical BIA report (Section 8.1.1) any groundwater inflows during construction are anticipated to be minor that could be dealt with sump pumping. It was further suggested by the BIA that the contractor should have in place a contingency plan to deal with more significant or

prolonged inflows as a precautionary measure. Trial excavations are proposed by the revised Geotechnical BIA report (Section 14) to assess the extent of inflows prior to construction; water proofing and tanking is proposed in the long term (Section 3.1.3.).

- 4.7. Considering the ground conditions, the depth and plan dimensions of the proposed excavations, the existing lower ground floor, the neighbouring structural levels, the monitored groundwater levels, and the fact that the on-site building is a detached structure, it is accepted that the proposed development is not anticipated to impact the hydrogeological environment.
- 4.8. Geotechnical interpretation including parameters for retaining wall design and a ground movement assessment (GMA) were presented in Sections 6 to 10 of the Geotechnical BIA report.
- 4.9. The GMA used proprietary software and CIRIA C760 methodology which is intended for embedded retaining walls, however, it is accepted that this approach can predict ground movements within the range typically anticipated for the proposed 'hit and miss' retaining wall techniques when carried out with good control of workmanship.
- 4.10. As anticipated, the GMA considered the proposed excavations and loads, the foundation characteristics of / and distances to neighbouring structures, the proposed sequence of construction, and short and long term conditions. The excavation considered in the GMA for the eastern wing was 3.20m (Section 8.1.3 of the Geotechnical BIA) which is a conservative assumption (and for this reason is not queried any further) given that the proposed excavation will be c.2.60m depth based on the structural proposal. Ground movements of c.2mm and between 2mm to 4mm were estimated due to underpin installation and subsequent basement excavation, respectively.
- 4.11. The potential impact and damage to the on-site listed building and the neighbouring building situated at 12B Keats Grove to the west, was predicted to be within Category 0 'negligible' according to the Burland scale. In order to minimise the anticipated ground movement, the recommendations discussed in the GMA should be adopted, including good control of workmanship during construction.
- 4.12. According to information included in the Structural BIA report, the building located at 12A Keats Grove to the east of the site, is supported on pile foundations and ground beams and is, therefore, not anticipated to be affected structurally by the proposed works, as discussed in Section 9.1 of the Geotechnical BIA report.
- 4.13. The existing boundary wall towards 12A Keats Grove is proposed to be supported with temporary support during construction. The boundary wall towards 12B Keats Grove is located within the subject site and was encountered significantly cracked during the site walkover. It

was indicated that any pre-existing damage of that boundary wall to the west will be repaired during construction stage and, as such, was not considered further in the GMA. Historic England and LBC may have to be consulted with regard to the details of the proposed repair of that boundary wall given the Grade II listed status of the on-site structure.

- 4.14. It is understood that all temporary works will be designed and finalised post-planning and prior to construction by a specialist contractor.
- 4.15. The Geotechnical BIA has confirmed (Section 11.1) that the impact on land stability due to the proposed development can be limited within Category 0 'Negligible' damage for the on-site and nearby structures. The reference of an exception for a Category 1 'Very Slight' damage noted in Section 5 (page 7) of the Structural BIA contradicts the outcome of the Geotechnical BIA, however, it is evidently a typographic error left from the previous scheme (planning reference 2019/5443/P) and for this reason it is not queried further.
- 4.16. Monitoring of the adjacent structures is proposed by the Geotechnical BIA on the basis of the predictions of the GMA. Condition surveys are also proposed prior to construction. It is understood that the monitoring strategy, including trigger levels and contingency measures, will be discussed and agreed with the owners of the adjacent properties under a separate process as proposed by the Geotechnical BIA (Section 11.2).
- 4.17. The subject site is not within an area prone to flooding. According to the Structural BIA report, the hardstanding area of the site will remain unchanged; the footprint of the proposed building will be c.5m² larger than the existing, however, this area comprises hardstanding surface already and therefore there will be no increase in surface flow. It is accepted that due to the proposed development there will be negligible impact to the hydrology of the site.
- 4.18. According to information presented in Section 5 and Appendix B of the Structural BIA report, underground drainage pipes enter the site from 12A Keats Grove, and join an existing pipe under the subject site. It should be ensured that 12A Keats Grove drainage pipes remain operational at all times. It is understood that the details of the technical arrangements will need to be agreed in advance of the works between the interested parties during a Party Wall Process as discussed in the Structural BIA.
- 4.19. Subject to LBC's consultation and approval, the recommendations of the arboricultural report included in the previous application (planning reference 2019/5443/P) with regard to trees' protection should be followed.

5.0 CONCLUSIONS

- 5.1. The Basement Impact Assessment (BIA) has been carried out by individuals with suitable qualifications.
- 5.2. The site is irregularly shaped and is occupied by a Grade II listed three-storey detached villa.
- 5.3. The proposed development includes lowering of the existing lower ground floor slab of the main building by 0.38m and demolishing and rebuilding the eastern house wing.
- 5.4. A 'hit and miss' underpinning technique will be adopted for the construction of the load-bearing structural elements for the wing basement. Outline construction methodology, construction sequence drawings and preliminary calculations were presented in the Structural BIA report.
- 5.5. The revised Geotechnical BIA report included screening and scoping sections for land stability, hydrogeology and hydrology, supported by a desk study and a site walkover.
- 5.6. A site-specific intrusive ground investigation recorded Made Ground over clayey Head deposits over London Clay at depth. Post-drilling monitoring revealed relatively shallow groundwater. Any groundwater inflows during construction will be dealt with sump pumping.
- 5.7. The proposed development is not anticipated to impact the hydrogeological environment or the hydrology of the site.
- 5.8. The potential damage to the host building and neighbouring structures is anticipated to be negligible.
- 5.9. Historic England and LBC may have to be consulted with regard to the proposed repair of the boundary wall towards 12B Keats Grove, given the Grade II listed status of the on-site structure.
- 5.10. Monitoring of the adjacent structures is proposed. Condition surveys are also proposed prior to construction. A monitoring strategy should be discussed and agreed with the owners of the adjacent properties under a separate process.
- 5.11. The underground drainage pipes joining the site from 12A Keats Grove should remain operational at all times.
- 5.12. Subject to LBC's consultation and approval, the recommendations of the arboricultural report with regard to tree protection should be followed.
- 5.13. Based on the above comments, it can be confirmed that the proposal adheres to the requirements of the CPG Basements.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

No comments raised

Appendix 3: Supplementary Supporting Documents

None

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