CampbellReith
consulting engineers

Basement Flat, 39 Priory Road, London NW3 1SY

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 13398-83
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 the Basement Flat, 39 Priory Road, London, NW6 4NN, (planning reference 2020/0715/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 proposed development comprises a lowering and lateral extension to the rear of the lower ground level flat outside the original building footprint. A lightwell is also proposed at the front of the property.

1.5. The qualifications of the individuals involved in the BIA are in accordance with LBC guidance.

1.6. Screening and scoping assessments are presented, supported by desk study information.

1.7. A ground investigation report has been provided. The BIA indicates that the proposed basement extension will be founded within the London Clay.

1.8. The BIA identifies that groundwater was not encountered during the ground investigation and that the London Clay is designated as Unproductive Strata. There will be no adverse impact to the hydrogeological environment.

1.9. The proposed development will not result in an increase in impermeable site area. Drainage will be provided by attenuation SUDS. There will be no impacts to the hydrological environment.

1.10. Interpretative geotechnical parameters are presented, in accordance with LBC guidance.

1.11. A ground movement assessment (GMA) has determined the maximum damage to neighbouring properties will be no worse than Category 1 (Negligible) in accordance with the Burland Scale.

1.12. The BIA complies with the requirements of CPG: Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 17/02/2021 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for Basement Flat, 39 Priory Road, London, NW6 4NN, Camden reference 2020/0715/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. 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 *"Excavation to the front elevation for the formation of a new lightwell and associated landscaping works, demolition of the existing conservatory at lower-ground floor and erection of a full width rear part single part 2 storey rear extension with terrace above."*

The Audit Instruction confirmed the property does not involve, or was a neighbour to, listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal on 18/02/2021 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA), ref LBH4627ia, dated January 2021, by LBHGEO;
- Factual Site Investigation Report, ref JN1512, dated January 2020, by ST Consult;
- SuDS Assessment, ref LBH4627suds, dated January 2021, by LBHGEO;
- Email from LBHGEO dated 16th March 2021 confirming bearing capacity of the soils at formation level (Appendix 3).
- Planning Application Drawings consisting of:

  Location Plan

  Existing Drawings

  Proposed Drawings

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Page 2 BIA.
Is data required by Cl.233 of the GSD presented?	Yes	LBHGEO BIA.
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 2 BIA.
Are suitable plan/maps included?	Yes	Section 2 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	Section 4.1.3 of the BIA.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 4.1.1 of the BIA.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 4.1.2 of the BIA.
Is a conceptual model presented?	Yes	Section 5 of the BIA.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.2.3 of the BIA.

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.2.1 of the BIA.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.2.2 of the BIA.
Is factual ground investigation data provided?	Yes	ST Consult ground investigation report.
Is monitoring data presented?	No	Groundwater was not recorded during Ground Investigation.
Is the ground investigation informed by a desk study?	Yes	Section 3 of the BIA.
Has a site walkover been undertaken?	Yes	Section 5 of the BIA.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Section 7.1.3 of the BIA.
Is a geotechnical interpretation presented?	Yes	Section 7.2 of the BIA.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 6.3 of the BIA.
Are reports on other investigations required by screening and scoping presented?	Yes	Ground investigation report and SUDS Assessment provided.
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	Section 8 of the BIA.
Are estimates of ground movement and structural impact presented?	Yes	Section 7 of the BIA.

Item	Yes/No/NA	Comment
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	
Has the need for monitoring during construction been considered?	Yes	Section 9 BIA.
Have the residual (after mitigation) impacts been clearly identified?	Yes	Section 8.4 BIA.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	Section 7 BIA
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	LBHGEO SUDS report.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	Section 8.3.3 BIA.
Are non-technical summaries provided?	Yes	Page 6 BIA.

4.0 DISCUSSION

4.1. The BIA was undertaken by LBHGEO Ltd and the reported qualifications of the authors are in line with those required by LBC guidance.

4.2. The site is rectangular in shape and currently occupied by a semi-detached three storey Victorian house with a single storey basement. The existing ground floor level is 1.5m above street level while the basement is set 1.5m below street level. To the rear of the property is a basement level single storey patio extension, with roof terrace, set 0.4m above the main basement level. A garage is present at ground level, adjacent to the roof terrace. There is stepped access from the patio basement to the rear garden which is at street level. The rear garden comprises a hard surfaced patio with landscaped borders and four mature trees at the rear of the site. The front garden is at street level, hard surfaced and bordered by a wide hedge.

4.3. It is proposed to construct a new extension to replace the existing basement level conservatory, requiring approximately 0.5m of excavation to reduce the floor level by 0.4m to match that of the main building. The development includes a rear lateral extension of the basement level 1.0m into the garden requiring an approximate excavation depth of 1.5m below street level.

4.4. The LBC Instruction to proceed with the audit identified that the applicant's property is not listed and that the basement proposal does not neighbour any listed buildings.

4.5. The site is located at the junction of Priory Road to the east and Abbot's Place to the north. No 39 is bounded to the south by the adjoining property, No. 37, indicated to be of similar construction to No. 39. The adjoining property includes a basement floor situated at a similar level to No. 39, with a recently constructed rear extension with a basement level patio.

4.6. Screening and scoping assessments are presented and informed by desktop study information. Most of the relevant figures/maps from the Arup GSD and other guidance documents are referenced within the BIA to support responses to the screening questions.

4.7. A site investigation has been undertaken by ST Consult, and the factual report has been submitted as a separate document to the BIA audit report.

4.8. The BIA and factual report identifies Made Ground to a maximum depth of 0.90m bgl. The London Clay was proven to 4.20m bgl and described as firm to stiff. It is noted that no insitu strength testing was undertaken as part of the investigation.

4.9. Interpretative geotechnical parameters are provided within the BIA. Following discussion with LBHGEO a recommended bearing capacity for the foundation design has been provided by email, included within Appendix 3 of this audit report.

4.10. Groundwater was not encountered during drilling and no groundwater monitoring was undertaken. The BIA identifies that the London Clay is of very low permeability and designated as Unproductive Strata, and no significant groundwater flow is anticipated. Considering the depth and extent of the proposed basement extension, and the underlying London Clay, it is accepted that there will be no significant impact on the hydrogeological environment.

4.11. The BIA identifies that the site is greater than 120m from the nearest water course. EA surface water flood maps indicate that parts of the site and the surrounding area are at a low risk of flooding. A surface water drainage assessment has been undertaken and a SUDS strategy has been developed. There will be no significant impact to the hydrological environment.

4.12. An outline construction sequence is described in Section 6.2 of the BIA. It is proposed to demolish the existing conservatory superstructure at the rear of the building. The northern retaining wall that supports the adjacent ground floor garage will then be extended and deepened where necessary. The construction sequence describes temporary propping at the existing floor level, extending the existing lower ground floor down and undertaking deepening of the foundations to the ground floor garage, constructed by hit-and-miss methods and designed for soil retaining where necessary. Section 6 advises that the southern retaining wall of the conservatory, set back from the property boundary, will be removed and reconstructed at the required depth.

4.13. Where the excavation extends further into the rear garden a new retaining wall will be constructed to support the retained garden, formed by conventional L-shaped reinforced concrete segments excavated and cast in-situ in a 'hit and miss' sequence of approximately 1m wide sections. A similar construction sequence will occur at the front of the property for the light well external perimeter walls.

4.14. During excavation, temporary high and low propping will be installed. Following construction of the perimeter walls and as the main basement excavation proceeds, full width propping will be provided to limit lateral ground movements for both the rear and front excavations. In the permanent case the reinforced L-shaped segments will connect to the basement slab and the basement raft slab will act as a horizontal prop.

4.15. The proposal should be subject to detailed design by a structural engineer.

4.16. No trees are planned to be removed as part of the proposed development. However, the BIA has assessed the effect of trees in accordance with NHBC guidelines, and has determined that the foundations of the rear retaining wall should be extended 0.7m below the basement level, below the depth of influence of the trees.

4.17. The BIA advises there is the potential for water to collect behind the new retaining walls in the long term and the below-ground structure is to be waterproofed and designed to withstand hydrostatic pressures with a design groundwater level equal to the street level at 39.0m AOD.

4.18. A ground movement assessment (GMA) has been provided based on the proposed construction to demonstrate that ground movements and consequential damage to neighbouring properties will be within LBC's policy requirements. The analysis is based on the short term and long term heave movements caused by the basement excavation and the formation of underpinned retaining walls in dry conditions and with good workmanship. A maximum of 5mm of vertical and horizontal movement has been allowed for a single stage of underpinning.

4.19. The GMA indicates that damage to No. 39 itself and neighbouring No. 37 will be Category 0 (Negligible) in accordance with the Burland Scale. Damage to the adjacent ground floor garage will be a maximum of Category 1 (Very Slight).

4.20. The proposed rear extension is located approximately 7m from the pavement of Abbot's place, and the front light well is approximately 5m from the pavement of Priory Road. Negligible ground movements have been determined to affect either public highway. Appropriate asset protection measures should be agreed with utility asset owners, as required.

4.21. Section 9 of the BIA proposes a structural movement monitoring strategy to be adopted to limit damage to within the limits predicted, subject to Party Wall agreements.

5.0 CONCLUSIONS

5.1. The qualifications of the individuals involved in the BIA are in accordance with LBC guidance.

5.2. Screening and scoping assessments are presented, supported by desk study information.

5.3. Factual ground conditions information and interpretative geotechnical parameters are provided.

5.4. The BIA indicates that there will be no adverse impact to the hydrogeological environment.

5.5. The site has a very low to low risk of flooding from all the sources.

5.6. The referenced drainage proposals have been provided and confirm suitable mitigation to ensure there will be no impacts to the hydrological environment.

5.7. A GMA indicates that damage to neighbouring structures will be a maximum of Category 1 (Very Slight) in accordance with the Burland Scale.

5.8. The BIA meets the requirements of Camden Planning Guidance: Basements.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

None supplied.

Appendix 2: Audit Query Tracker

None

Appendix 3: Supplementary Supporting Documents

Email from LBHGEO dated 16th March 2021

2020/0715/P 39 Priory Road
Darcy Kitson-Boyce to: grahamkite@campbellreith.com 16/03/2021 13:07
Cc: "Seamus Lefroy-Brooks"

Dear Graham,

Further to our conversation earlier, I confirm that a net allowable bearing capacity of 100 kN/m^2 is available at the basement formation level.

Kind Regards,

Darcy Kitson-Boyce
Associate
MEng (hons) GMICE FRGS FGS MIEnvSc

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