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6 Parsifal Road
NW6 1UH

Basement Impact Assessment
Audit

For

London Borough of Camden

Project Number: 12727-28
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 6 Parsifal Road, NW6 1UH (planning reference 2017/6647/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 and SSR have been carried out by established firms of engineering consultants using individuals who possess suitable qualifications.

1.5. The proposal consists of lowering an existing partial basement level and extending it beneath the entire footprint of the existing building to a depth of between 2.30 and 2.50m below ground level.

1.6. The basement is proposed to be constructed of reinforced concrete utilising conventional basement construction methods. Suitable temporary works details have been provided.

1.7. A site investigation was carried out which has identified a made ground overlaying London Clay. Ground water was recorded at a moderately shallow depth.

1.8. Outline structural calculations have been provided to demonstrate the feasibility of the proposal.

1.9. A ground movement assessment has been produced that indicates an anticipated worst case damage category of 1. This is accepted however clarification is required with regards to one of the parameters used in this analysis.

1.10. A proposed monitoring statement is provided.

1.11. It has been identified that the basement may be constructed beneath the ground water level, temporary works details are provided that take account of this.

1.12. It is accepted that the proposed basement is unlikely to significantly impact ground water flows.

1.13. The BIA advises the development proposal will not increase the impermeable areas of the site at surface level from the current situation. This is accepted.

1.14. It cannot be confirmed that the BIA has demonstrated adherence to the requirements of CPG4. A summary of open queries can be found in Appendix 2.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 04/12/2017 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 6 Parsifal Road, London, NW16 1UH and 2017/6647/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 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;

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 *"Conversion of lower ground floor garage to habitable room and lowering of existing basement floor by 340mm; excavation of existing crawlspace to the rear to create additional basement room; alterations to front façade at lower ground floor level (replacement of garage doors with new windows, demolition of small single storey front extension and installation of new timber door); and repaving of front driveway.*

The Audit Instruction also confirmed 6 Parsifal Road did not involve or was a neighbour to listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal on 22 January 2018 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA) Rev 2 by Croft Structural Engineers dated September 2017;
- Ground Investigation & Basement Impact Assessment (BIA) Rev 1.01 by Ground & Water dated November 2017 and non-technical summary;
- Planning Application Drawings consisting of

  Site Location Plan dated December 2009

  Existing Plans and Sections 1.01, 1.02, 1.03 and 1.04 dated December 2017

  Proposed Plans and Sections 2.01, 2.02, 2.03 and 2.04 dated December 2017
- Design & Access Statement dated November 2017
- 1x Response – Thameswater (Redacted)

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	
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	
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	Yes	
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	
Is a geotechnical interpretation presented?	Yes	
Does the geotechnical interpretation include information on retaining wall design?	Yes	
Are reports on other investigations required by screening and scoping presented?	Yes	
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	N/A	The presence of neighbouring basements has not been discussed.
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	Yes	However a query has been raised with regards to the parameters used in the GMA.

Item	Yes/No/NA	Comment
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	
Has the need for monitoring during construction been considered?	Yes	
Have the residual (after mitigation) impacts been clearly identified?	No	None anticipated.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Clarification required with regards to GMA parameters.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	Clarification required with regards to GMA parameters.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	However clarification required with regards to GMA parameters.
Are non-technical summaries provided?	Yes	Though missing residual (after mitigation) impacts.

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) comprises two reports prepared by Ground & Water Limited (G&W) covering the hydrogeological, hydrological aspects, and by Croft Structural Engineers (CE) covering the stability aspects of the proposal. Architectural drawings are provided by Stephen Fletcher Architects.

4.2. The qualifications of the author of the BIA and the associated reports are in compliance with the requirements of CPG4.

4.3. 6 Parsifal Road is an existing semi-detached four storey residential building with a partial basement under the northern part of the building. A garden is located to the rear of the property. The property is located in a residential area with No. 4 Parsifal Road to the west and No. 8 Parsifal Road, the attached property, to the east.

4.4. The proposed basement consists of a single storey construction formed by lowering an existing lower ground floor area beneath the front of the building by 300mm and extension of the basement/ lower ground floor to the rear of the property. The basement is anticipated to be formed at between 2.30 and 2.50m bgl.

4.5. The basement is proposed to be constructed of reinforced concrete underpinned cantilever retaining walls with a suspended basement RC slab. Where the basement is to be lowered by 300mm the proposed basement slab is to underpin the existing foundation without a cantilever stem.

4.6. A site specific site investigation was carried out comprising a single windowless sampler to a depth of 10mbgl along with gas and groundwater monitoring well to 5mbgl, with ground water monitored during a single repeat visit. Foundation inspection pits were excavated in three locations at the rear of the property.

4.7. The geology was identified as made ground to a depth of 1.00mbgl, overlaying London Clay proven to the full depth of the borehole, 10.00mbgl. Ground water was recorded at 1.10mbgl, falling to 1.25mbgl on the return visit after bailing.

4.8. The foundation inspection pits identified in the location the existing building that foundations are founded within the made ground, shortly above the London Clay formation. In one location was identified as being founded onto The London Clay.

4.9. Outline structural calculations for the full height basement walls have been provided, along with an indication that the basement slab will be designed to accommodate heave forces.

4.10. A Ground Movement Assessment (GMA) is provided by G&W. The GMA has assumed basements are not present beneath adjacent properties and that they have foundations are on shallow foundations to a nominal depth. It has been assumed that the basement walls will be propped in the permanent and temporary case therefore can be considered as 'stiffly' propped.

4.11. The GMA has carried out 4 assessments using varying parameters, one assuming stiff clay, and three assuming soft to firm clay with three different parameters used for vertical movement which have been referred to as 'conservative', 'moderate', and 'realistic'. The analysis using 'conservative' parameters for soft clay calculates Burland category 2, whereas the other analyses calculate Burland damage categories of 0 or 1. It has been concluded that the damage category is 'likely' to fall within 0 or 1 given the conservative parameters which would not be anticipated to be realistic. This is accepted assuming good workmanship and the adherence to best practises in order to limit movements to those associated with 'moderate' and 'realistic' parameters.

4.12. The use of CIRIA C760 is accepted as a conservative analogy when applied to underpinning walls. However the use of a high stiffness wall with a permanent high level prop is not considered conservative given the existing timber floor is proposed to remain in place, with no permanent stiff prop directly installed to the head of the underpinning. Clarification is required as to the stiffness of the permanent high level prop, or otherwise the GMA should be recalculated.

4.13. The Structural Method Statement contains a description of existing conditions and a description of the proposed works, a construction programme and a construction plan. A proposed monitoring statement is also provided.

4.14. The construction method describes the basement walls as being constructed in a hit and miss sequence but generally sequential from the front to the rear of the property, with the existing suspended timber floor to remain in place and supported on new beams as required. Generic temporary works details are provided that indicate that cantilever basement walls and soil faces are to be propped in the temporary case. While the temporary works details are not bespoke to the project, they can be considered acceptable due to the smaller scale of the proposal and shallow depth of underpinning required for much of the property.

4.15. The G&W report indicates that the ground water identified during monitoring is perched water on top of the impermeable London Clay Strata, which has been identified as an unproductive stratum. It has been noted that perched ground water may be encountered during construction and that local dewatering via pumping may be required. The Croft report indicates that ground water is anticipated at a depth of 6.30mbgl, however this is assumed to be an error as it is inconsistent with the G&W report. It is accepted that wider ground water flows are unlikely to be disrupted by the proposed basement construction.

4.16. The BIA considers the basement is under the footprint of the property and will therefore not affect the surface water flow or surface water sewer discharge.

4.17. Given the concerns associated with the Ground Movement Assessment it is recommended the Burland category is recalculated and the BIA resubmitted. A summary of open queries can be found in Appendix 2.

5.0 CONCLUSIONS

5.1. The BIA and SSR have been carried out by established firms of engineering consultants using individuals who possess suitable qualifications.

5.2. The proposal consists of lowering an existing partial basement level and extending it beneath the entire footprint of the existing building to a depth of between 2.30 and 2.50m bgl.

5.3. The basement is proposed to be constructed of reinforced concrete underpinned cantilever retaining walls with a suspended basement RC slab. Suitable temporary works details have been provided.

5.4. A site specific site investigation was carried out which has identified a moderate depth of made ground overlaying London Clay. Ground water was recorded at 1.10mbgl, falling to 1.25mbgl on a return visit.

5.5. Outline structural calculations for the full height basement walls have been provided, along with an indication that the basement slab will be designed to accommodate heave forces.

5.6. A ground movement assessment has been produced that indicates an anticipated worst case damage category of 1, based on analysis of several parameters. This is accepted however clarification is required with regards to the propping of the underpinned walls in the permanent case.

5.7. A proposed monitoring statement is provided.

5.8. The BIA has confirmed that the proposed basement will be founded within the London Clay. Groundwater monitoring has indicated water may be encountered during basement construction. Proposals for dewatering are presented and accepted.

5.9. Ground water has been identified as perched water rather than contributing to wider strategic ground water flows. It is therefore accepted that the impact on ground water will not be significant.

5.10. The BIA advises the development proposal will not increase the impermeable areas of the site at surface level from the current situation. This is accepted.

5.11. It cannot be confirmed that the BIA has demonstrated adherence to the requirements of CPG4. A summary of open queries can be found in Appendix 2.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	Clarification regarding use of high stiffness parameters in calculation of ground movement assessment.	Open	

Appendix 3: Supplementary Supporting Documents

None

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