

219a Goldhurst Terrace

Basement Impact Assessment Audit

For
London Borough of Camden

Project Number: 13693-10

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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 219a Goldhurst Terrace NW6 3EP (planning reference 2021/0686/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 qualifications of the individuals involved in the BIA are in accordance with LBC guidance.
- 1.5. A Desk Study broadly in accordance with LBC guidance has been presented.
- 1.6. The revised BIA submission includes the findings of two phases of ground investigation and presents soil parameters and interpretation for the site.
- 1.7. It is accepted that the proposed development will not have a significant impact on the slope stability or hydrogeology of the surrounding area.
- 1.8. With the inclusion of the mitigation measures identified it is accepted that the proposed development will not have a significant impact on the hydrology of the area.
- 1.9. Outline structural information for the proposed basement is provided in the revised BIA, along with a construction methodology and sequence, temporary works details and plans showing the maximum excavation depth required to accommodate the basement floor and foundation excavations. Utility data is also provided.
- 1.10. A Ground Movement Assessment (GMA) has been undertaken and the damage category for neighbouring structures is predicted. It is accepted that, with the implementation of the monitoring strategy and mitigation measures proposed, damage to neighbouring structures may be controlled such that it does not exceed Burland Category 1 (Very Slight).
- 1.11. Based on the revised submission, the BIA is considered to meet the requirements of Camden Planning Guidance: Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 21 May 2021 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 219A Goldhurst Terrace, London NW6 3EP, Planning Reference 2021/0686/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 (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 *"The excavation at lower ground floor level for the erection of a 2 storey rear extension, following the demolition of the existing single storey rear addition and replacement of single glazed timber sash windows of the front bay window to double glazed window."*

The Audit Instruction confirmed neither 219a Goldhurst Terrace, nor neighbouring buildings, are Listed.

2.6. CampbellReith accessed LBC's Planning Portal on 20th July 2021 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA) by Ashton Bennett Consultancy, re. MZ 3470, issue 1, dated April 2021.
- Design Statement by KKR Planning & Design Ltd, ref. KKR-1316, dated November 2020.
- Factual Geotechnical Ground Investigation Report by STM Environmental Consultants Ltd, ref. GT-2021-000045, version 1.0, dated 16 June 2021.
- Planning Application Drawings consisting of Location Plan, Existing Plans and Sections, Proposed Plans and Sections dated December 2020 by KKR Planning & Design Ltd.

2.7. Subsequent to the initial audit report, CampbellReith gained access to the following relevant documents:

- Basement Impact Assessment Report (BIA) by Ashton Bennett Consultancy, re. MZ 3482, issue 1, dated November 2021.
 - Including Appendix C, Ground Movement Assessment rev 4.
 - Including Appendix E, Borehole Logs.
 - Including Appendix F, Laboratory Test Results.
 - Including Appendix G, Structural Method Statement by Croft Structural Engineers, ref. 210922, dated December 2021.
 - Including Appendix H, Utility Search Report, dated 23 November 2021.
- Flood Risk Assessment by Croft Structural Engineers, ref. 210922, revision 1, dated 02 March 2022.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Updated information confirms suitable qualifications for land stability assessment.
Is data required by Cl.233 of the GSD presented?	Yes	Updated information include: Utility data (Appendix H), outline structural information and construction methodology, and outline construction programme (Appendix G).
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	Outline structural information and construction methodology are provided in the revised BIA (Appendix G).
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 9.1 of the revised BIA, Table 4 of the BIA.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	The revised BIA now considers the change to the proportion of hard surfaced areas.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	The revised BIA now considers the change to the proportion of hard surfaced areas.
Is a conceptual model presented?	Yes	Appendix D of the BIA

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 10.2, Table 5 of the BIA.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Based on the revised submission.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Based on the revised submission.
Is factual ground investigation data provided?	Yes	Additional site investigation has been carried out and is now discussed in the revised BIA
Is monitoring data presented?	Yes	Section 10.5 of the revised BIA.
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	In Appendix G of the revised BIA submission.
Is a geotechnical interpretation presented?	Yes	Site investigation data is considered in Section 10.4 of the revised BIA.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 11.6 of the revised BIA
Are reports on other investigations required by screening and scoping presented?	Yes	Ground Investigation report, Utility Search Report, Analytical Test Report and a Structural Methodology Report are provided in the revised BIA.
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	

Item	Yes/No/NA	Comment
Is an Impact Assessment provided?	Yes	Section 11 of the BIA.
Are estimates of ground movement and structural impact presented?	Yes	Appendix C of the BIA.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	Based on the revised BIA submission
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Section 11.13 of the revised BIA.
Has the need for monitoring during construction been considered?	Yes	Provided in Appendix C of the BIA.
Have the residual (after mitigation) impacts been clearly identified?	Yes	Sections 11.13 and Non-Technical Summary of the revised BIA.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	Based on the revised BIA submission and updated Ground Movement Assessment.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Mitigation measures included in section 11.13 & Non-Technical Summaries of the revised BIA.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	Based on the revised submission
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	Revised GMA indicates damage will not exceed Burland Category 1 damage.
Are non-technical summaries provided?	Yes	Non-Technical Summaries section of the revised BIA.

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out by engineering consultants Ashton Bennett Consultancy. The revised Basement Impact Assessment confirms that the individuals concerned in its production have suitable qualifications in line with those requested by LBC guidance.
- 4.2. The LBC Instruction to proceed with the audit identified that the neither the basement proposal nor adjacent structures are listed buildings.
- 4.3. The site area comprises the house and garden of 219a Goldhurst Terrace, which is a large, 3 storey mid-terrace residence on a plot of 400m². The house is attached on the west side by house No. 217 and on the east by No. 221. The building is divided into 3 no. flats, of which flat A is at ground floor level.
- 4.4. It is proposed to extend the ground level of the house to the rear and construct a basement level beneath the ground level extension. A new sunken patio area is proposed within the rear garden, adjacent to the extension. The deepest floor level for the basement is given as 2.10m below ground level (bgl) and the foundation stratum is anticipated to be at 3.00m bgl.
- 4.5. The BIA documents include the majority of the information required from a desk study in line with the GSD Appendix G1. An Essentials Utility Search Report is provided to check for the presence of underground infrastructure within the development's zone of influence.
- 4.6. A ground investigation was undertaken and comprised one borehole (BH01) to a depth of 8.00m bgl. Two additional window sample holes are included in the revised submission. The ground investigations encountered Made Ground to depths of between 0.65m and 1.30m, followed by firm to stiff London Clay to a depth of 8.00m.
- 4.7. The revised BIA includes soil parameters appropriate for the ground conditions encountered.
- 4.8. The BIA has used site investigation data and Desk Study data to identify ground conditions below the site to comprise Made Ground over London Clay. The BIA indicates the basement will be founded in London Clay.
- 4.9. Groundwater was not struck during the ground investigation. However, groundwater was encountered during monitoring at depths varying from 2.10m to 2.53m bgl. These levels are considered to represent perched water. Section 11.2 of the BIA indicates that groundwater is unlikely to be encountered in the London Clay and indicates sump pumping is considered suitable to deal with any water seepage into excavations.

- 4.10. The BIA indicates that a tributary of the lost River Westbourne runs north to south at approximately 50m east of the proposed development, and that it is culverted by the North West Storm Relief Sewer. Utility data is provided as part of the revised submission and shows the location of this sewer with respect to the property.
- 4.11. The site is identified as being within a Critical Drainage Area and the Goldhurst Local Flood Risk Zone. The BIA indicates that the site is at very low risk from flooding from all the sources.
- 4.12. The revised BIA identifies that the proposed development will result in an increase in the amount of hard surfaced area. Mitigation measures are provided in the Croft Structural Engineering Flood Risk Assessment (FRA) included as part of the revised submission. These include non-return valves on drains, permeable paving to new areas of external hardstanding, replacement of the existing front driveway with permeable paving and the use of rainwater harvesting. On this basis it is accepted that the proposed development will not have a significant impact on the hydrology of the area.
- 4.13. It is accepted that the proposed development will not impact the slope stability of the area.
- 4.14. Section 11.5 of the BIA considers heave due to uplift of the ground resulting from excavation of the basement. The BIA indicates that the basement floor should either be suspended to accommodate this heave, or designed to be suitably reinforced to withstand an uplift pressure of 25kPa.
- 4.15. A Structural Methodology report is now provided in Appendix G of the revised BIA. It includes an outline construction programme, construction methodology, permanent and temporary works, construction management plan and structural calculations. The BIA indicates the basement will be formed by underpinning using a "hit and miss" sequence, in bays not exceeding 1m width. The BIA identifies the need for a good quality of workmanship and construction control throughout.
- 4.16. An updated Ground Movement Assessment (GMA) is presented in Appendix C of the revised BIA submission. The GMA uses methods presented in CIRIA C760 to calculate a building damage category. It should be noted that, whilst the CIRIA approach is intended for embedded retaining walls, we accept that the predicted ground movements are within the range typically anticipated for underpinning techniques carried out with good control of workmanship (typically on the order of 5mm to 10mm). The GMA assumes high support stiffness during excavation of the basement.
- 4.17. The revised GMA now includes a plan showing the structures assessed as part of the GMA. A total horizontal movement of 5.5mm and vertical movement of 4.125mm are predicted. Using the ground movements predicted from the GMA, a Damage Category Assessment has been

undertaken, which predicts that damage to neighbouring structures will not exceed Burland Category 1 (Very Slight).

- 4.18. Although the vertical movement calculated in the GMA is less than that typically expected for a single lift of underpinning, the trigger levels for monitoring of the Party Walls have been set to reflect this reduced amount of vertical movement and mitigation measures have been described. As such, through implementation of the proposed monitoring strategy and use of good workmanship, damage to structures may be limited to Burland Category 1 (Very Slight).
- 4.19. The monitoring strategy should be agreed as part of the party wall agreement.

5.0 CONCLUSIONS

- 5.1. The authors of the revised BIA submission hold the appropriate qualifications in accordance with LBC guidance.
- 5.2. A Desk Study broadly in accordance with LBC guidance has been presented.
- 5.3. The revised BIA submission includes the findings of two phases of ground investigation and presents soil parameters and interpretation for the site.
- 5.4. It is accepted that the proposed development will not have a significant impact on the slope stability or hydrogeology of the surrounding area.
- 5.5. Mitigation measures have been proposed to address the impact from increasing the proportion of hard surfacing. With the inclusion of the mitigation measures identified, it is accepted that the proposed development will not have a significant impact on the hydrology of the area.
- 5.6. Outline structural information for the proposed basement is provided in the revised BIA, along with a construction methodology and sequence, temporary works details and plans showing the maximum excavation depth required to accommodate the basement floor and foundation excavations. Utility data is also provided.
- 5.7. A Ground Movement Assessment (GMA) has been undertaken and predicts horizontal movements generally within the range expected for underpinning construction. Vertical movements are lower than expected, however a monitoring strategy has been provided, which uses suitable conservative trigger levels. These levels correspond with mitigation measures to control and limit movements associated with the development.
- 5.8. It is accepted that, with the implementation of the monitoring strategy and mitigation measures proposed, damage to neighbouring structures may be controlled such that it does not exceed Burland Category 1 (Very Slight).
- 5.9. Based on the revised submission, the BIA is considered to meet the requirements of Camden Planning Guidance: Basements.

Appendix 1: Residents' Consultation Comments

Resident's Consultation Comments

Surname	Address	Date	Issue raised	Response
Wong	217 Goldhurst Terrace	14/06/2021	Concern regarding potential damage or subsidence to their building resulting from the proposed basement	The revised BIA submission provides an updated Ground Movement Assessment along with monitoring proposals and mitigation measures to ensure that damage to neighbouring properties will not exceed Burland Category 1 (Very Slight) in accordance with LBC guidance.

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Qualifications	The land stability assessment should be completed by an author with CEng MICE.	Closed – see para 4.1	January 2022
2	Stability	Utility data should be provided and considered in the impact assessment.	Closed – see para 4.10	January 2022
3	Hydrogeology/Hydrology	The impact of the increase in impermeable surfacing should be assessed.	Closed – see para 4.12	March 2022
4	Hydrology	Further consideration of the increase in hard surfacing and the site's location within a Critical Drainage Area is required.	Closed – see para 4.12	March 2022
5	Stability	Ground conditions and geotechnical interpretation should be updated to consider the results of the ground investigation.	Closed – see para 4.6	January 2022
6	Stability	Outline structural and construction information, including sequencing and propping, details of the temporary and permanent works and an outline construction programme.	Closed – see para 4.15	January 2022
7	Stability	The GMA should be revised based on the intended construction method. Contour plans and calculations for structural walls considered in the GMA should be provided. Impacts to flats above should be confirmed.	Closed – see paras 4.16-4.18	March 2022
8	Stability	Monitoring trigger levels should be updated to reflect the results of the updated GMA.	Closed – see paras 4.18-4.19	March 2022

Appendix 3: Supplementary Supporting Documents

None

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