

Garages to the South of 27a West End
Lane, NW6 4Q5

Basement Impact Assessment
Audit

For
London Borough of Camden

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Contents

1.0 Non-technical summary 1

2.0 Introduction 3

3.0 Basement Impact Assessment Audit Check List..... 5

4.0 Discussion 8

5.0 Conclusions 11

Appendix

- Appendix 1: Residents' Consultation Comments
- Appendix 2: Audit Query Tracker
- Appendix 3: Supplementary Supporting Documents

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 Garages to the South of 27a West End Land, NW6 4Q5 (planning reference 2020/2782/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 was prepared by Ridge and Partners LLP using individuals who possess suitable qualifications to assess land stability and hydrology, but not hydrogeology.
- 1.5. It is understood that a single storey basement is proposed and the BIA has confirmed that the proposed basement will be founded on London Clay. It is likely that perched water will be encountered during basement excavation.
- 1.6. It is understood that the excavation for the basement will be facilitated by a contiguous piled perimeter retaining wall, supported by temporary props. An appropriate outline retaining wall design is requested.
- 1.7. It is requested that the hydrogeological assessment be further clarified and approved by a suitably qualified individual as per the requirements in CPG.
- 1.8. It is understood that the proposed development is located in an area susceptible to flooding. An assessment has been undertaken and a report is available and SuDS has been proposed. However further clarification is sought on the information provided in the FRA, as discussed in Section 4, to determine the impact of the basement on the hydrology of the area.
- 1.9. Stability impacts are limited to excavation induced ground movements. Analysis has been undertaken of horizontal and vertical ground movements and predicts that damage to surrounding properties can be limited to Burland Category 0. Steps to control movements and outline mitigation measures are provided.
- 1.10. Although an outline proposal for retaining wall is provided and the assumptions regarding ground conditions accepted, the analysis was not found to be development specific as discussed in Section 4.

- 1.11. Requests for further information are summarised in Appendix 2. Until these are addressed the BIA does not meet the requirements of CPG: Basements.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 12th August 2020 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for Garages to the South 27a West End Lane, NW6 4QJ (Planning reference: 2020/2782/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 *"Demolition of existing garages and redevelopment of the site for residential use (Use Class C3) with associated amenity space, new landscaping, cycle store, bin store and other associated works."*
- 2.6. CampbellReith accessed LBC's Planning Portal on 3rd September 2020 and gained access to the following relevant documents for audit purposes:
- Basement Impact Assessment prepared by Ridge and Partners LLP (dated June 2020), which includes the following reports:

- Site Investigation Report prepared by Soil Consultants (dated August 2017);
- Ground Movement Assessment prepared by Ridge and Partners LLP;
- Utility Records (dated August 2016);
- Flood Risk Assessment prepared by Create Consulting Engineers Ltd (dated September 2016).
- Design and Access statement prepared by Atomik Architecture (dated May 2020);
- SuDS Drainage Assessment with outline FRA prepared by Create Consulting Engineers (dated June 2020);
- Planning Application Drawings consisting of
 - Existing Plans: 0390(10)099, 0390(15)100;
 - Proposed Plans: 0390(20)105;
 - Proposed Elevation and Section: 0390(15)300 to 303, 0390(20)300G, 0390(20)301G, 0390(20)302E, 0390(20)303G, 0390(20)304, 0390(20)305, 0390(20)201H, 0390(20)202H, 0390(20)203F, 0390(20)204F.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	Subterranean groundwater flow has not been assessed by a suitably qualified person as required by CPG.
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	Section 1.6 and Section 8 of the BIA.
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?	No	Basements assumed to be absent for neighbouring properties.
Is a geotechnical interpretation presented?	Yes	
Does the geotechnical interpretation include information on retaining wall design?	Yes	However, Young's Modulus (E) is absent.
Are reports on other investigations required by screening and scoping presented?	Yes	Site Investigation Report, Utility records. It is understood that a Condition Survey has been undertaken for nearby structures. The report has not been presented but a description of the properties is provided in the BIA.
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	

Item	Yes/No/NA	Comment
Are estimates of ground movement and structural impact presented?	Yes	
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	However further clarification is requested to ascertain that the FRA is site specific.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Section 7.4 of the BIA.
Has the need for monitoring during construction been considered?	Yes	Considered in Section 7.4 of the BIA.
Have the residual (after mitigation) impacts been clearly identified?	Yes	
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	
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	Predicted damage is limited to Burland Category 0.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out by Ridge and Partners LLP and the individuals concerned in its production have suitable qualifications to assess land stability and hydrology, but not hydrogeology as per the requirements of CPG.
- 4.2. A Flood Risk Assessment report is included within the BIA, and has been carried out by Create Consulting Engineers Limited. The individuals concerned in its production have suitable qualifications.
- 4.3. It is proposed to demolish the existing block of garages and part of a paved car park area to facilitate the construction of a block of residential units, approximately 15m x 15m in area, comprising a basement and three storeys above.
- 4.4. The superstructure will be constructed from loadbearing masonry. The substructure will be embedded contiguous piled walls to 11m bgl around the perimeter, with their heads tied in by a capping beam at ground level. The basement slab will be suspended with a void former to accommodate heave. The maximum proposed excavation for the basement is 4m bgl. Temporary propping is also proposed to restrain movement of the perimeter walls during excavation.
- 4.5. The BIA has identified that the site is underlain by Made Ground to 2.20m bgl over London Clay proven to a depth of 15m bgl. Although groundwater was not encountered during drilling, subsequent monitoring of the standpipes recorded water levels to a shallowest depth of 0.58m bgl.
- 4.6. The BIA has identified that the site has perched groundwater in the Made Ground, is located 30m from a subterranean watercourse and that the lowest point of the basement may be close to/beneath mean water level of this water course. It is stated within the control of construction works that the removal of fines during dewatering will be minimised.
- 4.7. It is stated that the active '2 method' waterproofing system proposed for the basement, will help in mitigating the risk due to the subterranean watercourse. Dewatering during excavation is also proposed within the BIA. Although the assessment states the mitigation measures are likely to reduce the impact of the watercourse on the development, the BIA should confirm whether the converse is also true.
- 4.8. It is stated that removal of Made Ground as part of the proposed works will mitigate localised risk and residual impact of the subterranean groundwater on the surrounding structure. Further clarification of this statement is requested. It is noted that hydrogeology assessment has not been carried out/approved by a suitably qualified individual as per CPG requirements. Until the

requested information is provided, it cannot be confirmed that the basement will not have an adverse impact on the hydrogeology of the area.

- 4.9. The BIA has identified that the site is an area identified to have flood risk from surface water and infrastructure failure. However parts of the FRA appear to refer to a different site (for example, reference to the absence of a proposed basement and to 'Ewell Road' made in page 18 of the FRA), hence clarification is sought. It is stated that the adoption of SuDS system will alleviate demand on the sewer and reduce flood risk within the local area and downstream. A Flood Risk Assessment and SuDS drainage assessment has been included. Until confirmation is provided that the FRA is specific to the application site, it cannot be accepted that suitable mitigation measures have been adopted, and that the development will not impact the hydrology of the area. It is also noted that further mitigation may be required based on the response to prevent flooding of basement are required.
- 4.10. It is stated that there is a history of seasonal shrink-swell subsidence in the local area, the site is located within an area of previously worked ground, and that the development will significantly increase differential depth of foundations relative to neighbouring properties. It is also understood that the site is within 5m of highway/pedestrian right of way.
- 4.11. It is understood that no trees are proposed to be felled as part of the works. The BIA acknowledges presence of trees in adjoining gardens and describes measures to protect their roots. An arboricultural survey may be required during detailed design to confirm root protection measures.
- 4.12. It is accepted that there are no impacts to slope stability as the site does not include slopes, natural or manmade, greater than 7 degrees.
- 4.13. An outline design for steel sheet piling analysis and design is included in the BIA. However, it is understood that contiguous piled retaining wall is proposed. The ground and groundwater assumptions made in the design of the wall are conservative, however it is requested that a development specific outline design of retaining wall be presented.
- 4.14. It is stated that the proposed foundation and basement floor structures will incorporate void forming materials to accommodate any potential heave in the long term due to excavation.
- 4.15. A Ground Movement Assessment has been carried out for the installation stage and excavation stage of construction. Analysis has been undertaken of horizontal and vertical ground movements. Category 0 damage has been predicted based on the Burland scale and the methodology adopted for the assessment is accepted.
- 4.16. Section 7.4 of the BIA lists methods for 'Control of Construction Works' including condition survey before and after works. It is stated that Condition Surveys were undertaken for

neighbouring structures. The report was not presented although the condition of the party walls is described in the BIA.

- 4.17. Dependent on satisfactory calculations for the intended contiguous piled wall being presented, it is accepted that the proposed development will not affect land stability in the area, provided the control measures listed are adopted.

5.0 CONCLUSIONS

- 5.1. The BIA has been carried out by the individuals who possess suitable qualifications to assess land stability and hydrology, but not hydrogeology as per the requirements of CPG. The FRA has been undertaken by individuals who possess suitable qualifications.
- 5.2. The BIA has confirmed that the proposed basement will be founded within London Clay. Perched water is present on site.
- 5.3. It is proposed to undertake the basement excavation following construction of contiguous pile perimeter retaining wall, supported with temporary props. Ground and groundwater assumptions are accepted but a development specific outline design for the retaining wall is requested.
- 5.4. Further clarification as discussed in Section 4 and listed in Appendix 2 is required to confirm that the development will not impact the hydrogeology in the area. It is also noted that the assessment has not been authored/approved by an individual suitably qualified as per CPG requirements. This is requested.
- 5.5. The BIA has identified that the site is an area identified to have flood risk from surface water and infrastructure failure. A Flood Risk Assessment and SuDS drainage assessment is included. However further clarification is requested to confirm that the assessments are site-specific and that the development will not impact the hydrology in the area.
- 5.6. It is understood that the site does not include slopes, natural or man made, greater than 7 degrees, there is a history of seasonal shrink-swell subsidence in the local area, the site is located within an area of previously worked ground, and that the development will significantly increase differential depth of foundations relative to neighbouring properties. It is also understood that the site is within 5m of highway/pedestrian right of way.
- 5.7. It is understood that no trees are proposed to be felled as part of the works and that appropriate root protection measures will be adopted during construction.
- 5.8. A ground movement assessment has been presented and was found to be appropriate for the development. Control measures are suggested to reduce ground movement during construction. Subject to receiving outline calculations for the basement retaining walls, it is accepted that the proposed development will not impact land stability in the area, provided the control measures are adopted.
- 5.9. Requests for further information are summarised in Appendix 2. Until these are addressed the BIA does not meet the requirements of CPG: Basements.

Appendix 1: Residents' Consultation Comments

No relevant comments

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	Hydrogeology assessment to be authored/ approved by a suitably qualified individual as required by CPG.	Open	
2	Hydrogeology	Impact of development on the nearby water course to be assessed.	Open	
3	Hydrogeology	Clarification sought on the statement: <i>"removal of Made Ground as part of the proposed works will mitigate localised risk and residual impact of the subterranean groundwater on the surrounding structure"</i>	Open	
4	Hydrology	Confirmation required on whether the FRA is site specific and whether further mitigation measures are required.	Open	
5	Stability	Outline design of contiguous pile retaining wall is requested.	Open	

Appendix 3: Supplementary Supporting Documents

None

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