

**107A Priory Road, London,
NW6 3NN**

**Basement Impact Assessment
Audit**

For

London Borough of Camden

Project Number: 12066-68

Revision: D1

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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 10

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 107A Priory Road, London, NW6 3NN (planning reference 2015/5274/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, SI and PCS have been prepared by individuals who possess suitable qualifications.
- 1.5. The BIA has confirmed that the proposed basement will be founded within Clay and its foundations will be sized to limit bearing pressures to below the capacity of the founding stratum.
- 1.6. It was not possible to obtain sufficient groundwater level information during the site investigation, and so a high water level should be allowed for in the structural design of the basement. Measures to exclude water during construction should be provided.
- 1.7. Further investigation into the neighbouring basement depth should be confirmed to aid in the design of the basement structure and allow the ground movement assessment to be validated.
- 1.8. No assessment has been made of horizontal and vertical ground movements in and around the excavation, and this should be carried out to confirm the likely category of damage to neighbouring structures.
- 1.9. No provisions for heave protection under the basement slab have been allowed for against the advice in the site investigation. Outline calculations for the underpins and floor slabs are required with all assumptions clearly stated.
- 1.10. Proposals are provided for a movement monitoring strategy during excavation and construction. These should be agreed with the party wall surveyor together with pre and post construction condition surveys.
- 1.11. It is noted there is sufficient room from the highway at the front of the development to avoid likely damage to the pavement construction of services below.

- 1.12. It is accepted that the surrounding slopes to the development site are stable. It is accepted that the development will not impact on the wider hydrogeology of the area and is not in an area subject to flooding.
- 1.13. Queries and requests for further clarification or information are summarised in Appendix 2.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 20th Oct 2015 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 107A Priory Road, London, NW6 3NN, Reference 2015/5274/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
- 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; and,
 - 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 of a basement beneath the footprint of the house including a lightwells to the rear of the property".
- The Audit Instruction also confirmed 107A Priory Road involved, or was a neighbour to, listed buildings.
- 2.6. CampbellReith accessed LBC's Planning Portal on 9th November 2015 and gained access to the following relevant documents for audit purposes:
- Application Form
 - Arboriculture Report
 - Basement Impact Assessment

- Existing and Proposed site plans
- Flood Information
- OS Extract
- Priory Road Existing and Proposed
- Proposed Basement Structure
- Proposed Basement with Structure and Foundations
- Proposed Sections

2.7. It was noted that both the above documents and Camden's BIA Audit Instruction referred to further documents such as the Site Investigation Report and Report CA4603.04. A request to make these documents available was made to Camden on 12th November 2015.

Further documents were provided by email on 18th November 2015 and included:

- Proposed Construction Strategy
- Site Investigation Report

2.8. No residents' consultation comments pertinent to the BIA were received.

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?	NO	No Ground Movement Assessment provided.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	NO	No Ground Movement Assessment provided.
Are suitable plan/maps included?	YES	Various suitable plans and maps provided with the submission.
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	See Section 2 of CA4603.03
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	YES	See Section 1 of CA4603.03
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	YES	See Section 3 of CA4603.03
Is a conceptual model presented?	NO	However, soil and groundwater conditions are described in the Site Investigation Report.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	YES	See page 10 of CA4603.03

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	NA	No potential impacts identified.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	NA	No potential impacts identified.
Is factual ground investigation data provided?	YES	See Site Investigation Report
Is monitoring data presented?	YES	See Section 18 of Site Investigation Report
Is the ground investigation informed by a desk study?	YES	See Section 6 of Site Investigation Report
Has a site walkover been undertaken?	YES	See Section 7 of Site Investigation Report
Is the presence/absence of adjacent or nearby basements confirmed?	NO	See Section 7.4 and Section 14 of the Site Investigation Report. Also discussed on page 6 of the Proposed Construction Strategy.
Is a geotechnical interpretation presented?	YES	See Section F of Site Investigation Report
Does the geotechnical interpretation include information on retaining wall design?	YES	See Section 20 – 23 of Site Investigation Report
Are reports on other investigations required by screening and scoping presented?	NA	No further investigations are suggested
Are baseline conditions described, based on the GSD?	YES	See CA4603.03
Do the base line conditions consider adjacent or nearby basements?	YES	
Is an Impact Assessment provided?	YES	Page 10 – 11 of CA4603.03
Are estimates of ground movement and structural impact presented?	YES	However, these are based on previous experience and no evidence of project specific analysis has been provided.

Item	Yes/No/NA	Comment
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	YES	Page 10 – 11 of CA4603.03
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	NO	Generic statements made with respect to propping and water proofing. No Ground Movement Assessment provided.
Has the need for monitoring during construction been considered?	YES	See page 5 of Proposed Construction Strategy
Have the residual (after mitigation) impacts been clearly identified?	NO	No Ground Movement Assessment provided.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	NO	No Ground Movement Assessment provided.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	YES	Discussed on page 6 of the Proposed Construction Strategy.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	NO	No Ground Movement Assessment provided.
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	YES	However, no Ground Movement Assessment provided.
Are non-technical summaries provided?	YES	

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out by a well-known firm of engineering consultants, Cooper Associates, and the individuals concerned in its production have suitable qualifications.
- 4.2. The Proposed Construction Strategy (PCS) has been produced by the same consultant. The author is a chartered structural engineer but no proof of expertise in engineering geology.
- 4.3. The LBC Instruction to proceed with the audit identified that the basement proposal either involved a listed building or was adjacent to listed buildings but gave no details. No further mention of this can be found in the submission documents.
- 4.4. The proposed basement consists of a single storey below the full footprint of the existing building and also extending to the front and back with the formation of two lightwells at ground floor. There will also be a new staircase at the back of the property giving access from the basement to the rear garden.
- 4.5. The site investigation has identified that the existing ground slab is underlain by Made Ground to a depth of 0.40 - 0.90 metres, below which lies London Clay. There is also a thin band (0.20m to 0.55m) of gravel at approximately 1.50m below ground level
- 4.6. The site investigation has identified that the basement will be founded within the London Clay and as such could be subject to heave forces due to stress relief in the clay. The Proposed Construction Strategy states that the amount of heave likely to occur is not sufficient to require further protection measures. We would suggest further evidence to support this claim is provided.
- 4.7. Soil parameters for designing the basement structure are provided in the Site Investigation and also referred back to in the Proposed Construction Strategy. However, designs for the underpins and floor slab are not provided. Outline designs should be submitted with the BIA with a clear statement of the assumptions made.
- 4.8. No assessment of vertical and horizontal ground movements has been produced, so the prediction of potential damage to adjoining properties cannot be validated.
- 4.9. Proposals are provided for a movement monitoring strategy during excavation and construction. The final monitoring strategy, together with the pre and post construction condition surveys should be agreed as part of the party wall award.
- 4.10. It is accepted that the site currently is overlain with hardstanding. The area of new roof development on this front and back portion of the site does not impact on current rainwater discharge to the below ground surface water drainage system.

- 4.11. The basement waterproofing strategy is to use a concrete additive to restrict water ingress. As this is a habitable space, we would have expected a second line of defence (such as limiting crack width to 0.2mm). This may have been allowed for but is not mentioned in the Proposed Construction Strategy and should be clarified.
- 4.12. It was not possible to obtain sufficient groundwater level information during the site investigation, and so a high water level should be allowed for in the structural design of the basement. The PCS should be updated to include measures to prevent the ingress of perched water during construction.
- 4.13. It is accepted that there are no slope stability concerns regarding the proposed development and it is not in an area prone to flooding. It is also accepted that there are no significant groundwater flows which could be impacted by the basement construction.

5.0 CONCLUSIONS

- 5.1. The BIA, SI and PCS have been prepared by individuals who possess suitable qualifications.
- 5.2. The BIA has confirmed that the proposed basement will be founded within Clay and its foundations will be sized to limit bearing pressures to below the capacity of the founding stratum.
- 5.3. It was not possible to obtain sufficient groundwater level information during the site investigation, and so a high water level should be allowed for in the structural design of the basement. Measures to exclude water during construction should be provided.
- 5.4. Further investigation into the neighbouring basement depth should be confirmed to aid in the design of the basement structure and allow the ground movement assessment to be validated.
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- 5.8. It is noted there is sufficient room from the highway at the front of the development to avoid likely damage to the pavement construction of services below.
- 5.9. It is accepted that the surrounding slopes to the development site are stable. It is accepted that the development will not impact on the wider hydrogeology of the area and is not in an area subject to flooding.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Stability	The project has been described as a Burland Category 1, however, this is based on previous experience of similar projects. An assessment is required to confirm predicted movements (Horizontal and Vertical) during excavation and construction, which can be checked back against the Table 1 of BRE Digest 251.	Open	
2	Stability	The report suggests the neighbouring properties also have basements, however, the structural drawings and trial pits do not reflect this. Could a statement or sketch be provided to show how the scheme would be altered should the party wall be founded much lower than currently suggested?	Open	
3	Stability	The SI suggests heave protection should be allowed for beneath the basement slab, however, this is not agreed with in the PCS. Calculations are required for the underpins and floor slabs to demonstrate their feasibility.	Open	

Appendix 3: Supplementary Supporting Documents

None

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