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114 Prince of Wales Road, Camden, London NW5 3NE

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12466-01
Revision: D2

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Contents

Appendix

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 114 Prince of Wales Road, Camden, London, NW5 3NE (planning reference 2015/7293/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 Structural Method Statement (SMS) have been prepared by Ashton Bennet with structural engineering input from LIM Engineering Ltd and Price and Myers LLP, well-known firms of engineering consultants using individuals who possess suitable qualifications.

1.5. The proposal includes the extension of an existing basement into the rear garden to enable the construction of a light well. The extension is to be constructed using underpinning techniques for a retaining wall founded upon the London Clay.

1.6. Appropriate structural calculations have been provided.

1.7. It is not likely that the ground water table will be encountered during basement foundation excavation.

1.8. The SMS discusses underpinning with suitable temporary propping arrangements.

1.9. It is recommended that further investigation of the neighbouring foundations is carried out.

1.10. It is accepted that the surrounding slopes to the development site are stable.

1.11. It is accepted that the risk of flooding is low.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 05/09/2017 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 114 Prince of Wales Road, London (Camden Planning reference 2015/7293/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 Local Plan Adopted version. June 2017
- 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;

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 *"Erection of a replacement single storey rear extension and enlargement of existing basement with rear lightwell."*

The Audit Instruction also confirmed 114 Prince of Wales Road is not listed, nor is it a neighbour to a listed building.

2.6. CampbellReith accessed LBC's Planning Portal on 21/09/2017 and gained access to the following relevant documents for audit purposes:

- Initial BIA Impact Assessment Audit, CambellRieth Hill LLP, 2016 Rev D1
- BIA LCAL 3303 114 Prince of Wales BIA Report, Ashton Bennet, August 2017

  This includes:

  Appendix A: Drawings of Site Proposals

  Appendix B: Archival Maps

  Appendix C: Borehole Logs and DCP

  Appendix D Geotechnical and Environmental Test results

  Appendix E: Structural Method Statement & Construction Method (SMS)

  Appendix F: Ground Movement Methodology
- Planning and Heritage Statement 114 POWR, December 2015
- Existing Drawings

  PRWLS-E001 Dec 2015
- Existing Plans

  PRWLS-L001 Dec 2015

  PRWLS_P001-P004 Dec 2015

  PRWLS_S001-S002 Dec 2015
- Proposed Drawings

  PRWLS-L101 Mar 2017

  PRWLS-P100-P104 Mar 2017
- Proposed Plans

  PRWLS-E101 Mar 2017

  PRWLS-S101-S104 Mar 2017

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	Missing Flood Risk Assessment and detail on nature of hardstanding at rear of the garden.
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	Report advises garden is 'hard covered'. Confirmation required.
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?	No	Q3 Nature of hard standing not identified in the garden. It should be identified alongside identification of where surface water currently drains too. Proposal extends into garden. By how much is not clear but looks to be as much as 5m, >50% of existing garden. BIA states the same amount of water going into sewers, this should be confirmed. Appropriate measures should be identified to limit amount of surface water going into existing sewers.

Item	Yes/No/NA	Comment
		Q4 See Q3. If there is an increase in hard standing, may increase surface water flow into adjacent properties. Location and nature of the hard standing should be identified. Q6 Surface water flooding. Figure 15 is referred to but BIA incorrectly identifies a low risk from surface water. Should be medium risk.
Is a conceptual model presented?	Yes	
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	Q3 Nature of hard standing in the garden should be identified and comment on where surface water flow drains to, given the size of the garden. Q6 Surface water flooding is incorrectly identified as low risk from surface water. Should be medium risk. No Flood Risk Assessment provided. FRA should be provided.
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	A reasonable assumption has been made as to the presence of neighbouring basements matching that of the site property.

Item	Yes/No/NA	Comment
Is a geotechnical interpretation presented?	Yes	
Does the geotechnical interpretation include information on retaining wall design?	No	
Are reports on other investigations required by screening and scoping presented?	No	FRA required.
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	No	
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	Yes	
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?	Yes	
Has the need for monitoring during construction been considered?	Yes	
Have the residual (after mitigation) impacts been clearly identified?	No	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	An appropriate GMA, structural calculations, and method statement have been provided.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	Surface water flooding, nature of hard standing in the rear garden alongside where surface water drains to should be identified and assessed.

Item	Yes/No/NA	Comment
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 2?	Yes	Category 1
Are non-technical summaries provided?	Yes	Should be provided at the front of the BIA.

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by a well-known firm of engineering consultants, Ashton Bennet (AB) and the individuals concerned in its production have suitable qualifications.

4.2. Similarly a Conceptual Model, Monitoring Strategy and Ground Movement Methodology including ground movement calculations have been included in Appendix F of the BIA, authored by AB and the individuals concerned in its production have suitable qualifications.

4.3. A Structural Method Statement (SMS) and a Construction Method has been carried out by a well-known firm of engineering consultants, Price and Myers LLP. The author and reviewer are both chartered structural engineers but no proof of expertise in engineering geology has been provided as required by CPG4.

4.4. The LBC Instruction to proceed with the audit did not identify that the basement proposal either involved a listed building or was adjacent to listed buildings.

4.5. The proposal consists of extending the existing lower ground level to the rear of the property by approximately 5m, and partially lowering the existing rear portion of the basement by approximate 600mm.

4.6. The BIA has identified that the 80mm concrete ground slab is underlain by Made Ground to a maximum depth of 0.80 metres below which lies the London Clay Formation.

4.7. The BIA refers to basement depths of construction of 3.0 with a retained soil height of 2.5m which agrees with an Architect's proposed section A-A drawing, no. PRWLS-S101 dated March 2017.

4.8. The new basement structure is proposed as being formed by L shaped retaining walls which are to cantilever from the new basement slab. The form of construction of the ground slab is not discussed, it is therefore assumed that the retaining walls are to act as unpropped cantilevers. Shallower RC underpins are proposed to the original rear wall of the property in order to create a step between the existing lower ground level beneath the main property and the extended basement level to the rear of the property.

4.9. Structural calculations have been provided that design the wall L shaped retaining wall in the worst case, which has been considered as the lightwell retaining wall. Calculations have also been provided for the basement slab to resist buoyancy and ground heave using a conservative assumption that water will be found at ground level which is unlikely.

4.10. An assessment of vertical and horizontal ground movements has been produced, with a predicted Burland Damage category to adjoining properties of 1 (Very slight).

4.11. It is not accepted that the site currently is overlain with hard standing nor that the development at the rear of the property will not impact on current rainwater discharges to the below ground surface water drainage system. The BIA should provide supporting information to confirm hard standing at the area of the property and where the existing area at the rear of the property currently discharges to and its below ground surface water drainage system.

4.12. The BIA concludes that although the development is close to a now culverted tributary of the "lost" River Fleet, it will not impact on the wider hydrogeology of the area, any other watercourses, springs or the Hampstead Heath Pond chain catchment area. This conclusion is accepted.

4.13. It is accepted that there are no slope stability concerns regarding the proposed development

4.14. The BIA screening has identified that the road has previously flooded, and that a FRA may be required. However a FRA has not been produced, with the development proposal stated as a new light well only. It is not agreed that the proposal comprises of a new lightwell only as new bedrooms are proposed within the extended basement. Despite the risk of flooding being considered low it would be good practise to consider flood resistant measures in the detailed design given the sensitive use of the proposed basement and the history of flooding in the area.

5.0 CONCLUSIONS

5.1. The BIA and SMS have been carried out by well-known firms of engineering consultants using individuals who possess suitable qualifications.

5.2. The BIA has confirmed that the proposed basement will be founded within the London Clay.

5.3. It is likely that the ground water table will not be encountered during basement foundation excavation.

5.4. The SMS discusses underpinning retaining walls both with suitable temporary propping arrangements.

5.5. An appropriate site investigation consisting of trial pits and two window samples was undertaken.

5.6. Appropriate structural calculations have been provided for the basement retaining walls and basement slab.

5.7. Analysis has been undertaken of horizontal and vertical ground movements and mitigation measure proposed.

5.8. Proposals are provided for a movement monitoring strategy during excavation and construction.

5.9. Further investigation should be undertaken to identify if the surface water drainage will increase discharge to the sewer system.

5.10. It is accepted that the surrounding slopes to the development site are stable.

5.11. It is accepted that the development will not impact on the wider hydrogeology of the area.

5.12. It is accepted that the risk of flooding is low.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

None received

Surname	Address	Date	Issue raised	Response

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	As per requirements of CPG4, please provide evidence of the authors having the appropriate qualifications and experience.	Closed	05/10/17
2	BIA	All screening questions within the Arup GSD to be included within screening process. Any questions with identified potential concerns to be carried through to scoping.	Closed	05/10/17
3	BIA	Please provide additional information relating to construction methodology to include temporary works, mitigation measures and works programme. All assumptions concerning soil and groundwater properties, neighbouring foundations, dewatering and temporary and permanent propping to be stated.	Closed	05/10/17
4	Stability	Please update BIA to include conceptual ground model along with assumed groundwater conditions and retaining wall design parameters as required by CPG4	Closed	05/10/17
5	Stability	BIA to be updated to include bearing capacity and heave assessments and outline retaining wall calculations.	Closed	05/10/17
6	Hydrology	Outline/indicative details for proposed drainage to be submitted.	Closed	05/10/17
7	Hydrology	Drainage of the hardstanding in the garden at the rear of the property should be confirmed. With a comparison of surface areas that drain to the sewer as existing and proposed provided to demonstrate that SUDs are not required.	Open	

Appendix 3: Supplementary Supporting Documents

None

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