

54 Sumatra Road  
NW6 1PR

Basement Impact Assessment  
Audit

For  
London Borough of Camden

Project Number: 12727-38  
Revision: D1

April 2019

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### Document History and Status

Revision	Date	Purpose/Status	File Ref	Author	Check	Review
D1	April 2019	Comment	RNgk12727-38-260419-54 Sumatra Road-D1.doc	R Nair	G Kite	G Kite

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### Document Details

Last saved	26/04/2019 15:33
Path	RNgk12727-38-260419-54 Sumatra Road-D1.doc
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Project Number	12727-38
Project Name	54 Sumatra Road, NW6 1PR
Planning Reference	2018/5503/P

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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 54 Sumatra Road (planning reference 2018/5503/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 has been prepared by Bini Struct-E Limited. The qualifications of the authors are not in accordance with LBC guidance.
- 1.5. The BIA references superseded LBC guidance, and should be undertaken in accordance with Current guidance, CPG Basements 2018.
- 1.6. The existing property consists of a two storey terraced house with a partial basement below the front main part of the house. A full height single storey basement under the full building footprint plus lightwells is proposed, including deepening of the existing basement.
- 1.7. A site investigation indicates that the site is underlain by about 0.80m of Made Ground over London Clay. Complete interpretative geotechnical information is not provided.
- 1.8. Groundwater was not encountered during the site investigation works. It's stated that there will be no impact to the wider hydrogeological environment. This should be confirmed by an appropriately qualified hydrogeologist.
- 1.9. It's stated there will be a negligible overall increase in impermeable site area, by approximately 3m<sup>2</sup>, due to the proposed development, and that there will be no impact to the wider hydrological environment. This should be confirmed by an appropriately qualified engineer.
- 1.10. It is proposed to use underpinning to form the basement. Insufficient information has been provided, as detailed in section 4.
- 1.11. Structural calculations have been provided for review. These are queried, as detailed in section 4.
- 1.12. The ground movement assessment (GMA) is not accepted, as detailed in Section 4

- 1.13. Structural monitoring will be adopted during construction to assess any possible structural movement in the adjacent buildings. The scheme should be reviewed and revised, if required, once geotechnical, structural and GMA information has been re-evaluated.
- 1.14. Neither the BIA nor FRA have identified that the site is within a Local Flood Risk Zone or a Critical Drainage Area. Information within the LBC Strategic Flood Risk Assessment indicates potential for impact from surface water and sewer flooding. The FRA should be reviewed and assessment confirmed by an appropriately qualified engineer.
- 1.15. Queries and requests for additional information are discussed in Section 4 and summarised in Appendix 2. Until the additional information and assessment requested is provided, the BIA does not comply with the requirements of CPG Basements.

## 2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 1<sup>st</sup> February 2019 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 54 Sumatra Road, NW6 1PR.
- 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 Basements. March 2018.
  - 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;
  - d) 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 lean to side extension and full width rear extension, replacement of existing front bay windows, excavation and extension of existing basement, front walk-over glass light-well, new fence."*
- 2.6. CampbellReith accessed LBC's Planning Portal and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (ref: BIA\_11654) dated 19<sup>th</sup> October 2018, prepared by Bini Struct-E Limited (including site investigation, structural calculations and flood risk assessment within appendices).
- Planning Design Statement prepared by Peter Morris Architects.
- Planning Application Drawings consisting of  
  
Location Plan: Dwg no. 217-001, 217\_016A, 217\_004.  
  
Existing: Dwg no. 217\_004, 217\_018A.  
  
Demolition: 217\_013A.  
  
Proposed Plans: 217\_021D, 217\_030C, 217\_033B, 217\_031C, 217\_032, 217\_003G, 217\_011G, 217\_012E, 217\_015B, 217\_019B, 217\_017A, 217\_020C, 217\_911H.
- Planning Comments and Responses.

### 3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	Refer Section 2.1 of BIA.
Is data required by Cl.233 of the GSD presented?	No	Permeable / impermeable site area should be confirmed; utilities information within zone of influence; outline construction plan; outline temporary works sketches; the BIA should be undertaken in accordance with Current guidance, CPG Basements 2018.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	No	Information provided within BIA text to be evidenced with documents to be provided, as above.
Are suitable plan/maps included?	No	As above.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	No	As above.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Refer Section 4.2 of BIA.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Refer Appendices and Section 4.1 of BIA.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	Refer Appendices and Section 4.3 of BIA. The site is within a Critical Drainage Area and Local Flood Risk Zone, which has not been considered; permeable / impermeable site area to be clarified.
Is a conceptual model presented?	No	A conceptual model must be included within the BIA e.g. sketch section showing ground conditions, existing / proposed formation levels etc.



Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	Refer Section 5.2 of the BIA. Impacts to the highway / utilities to be assessed; GMA to be reviewed; review by qualified engineer.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	No	Refer Section 5.1 of the BIA; review by qualified hydrogeologist.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	An FRA is provided but does not reference LBC Strategic FRA / Critical Drainage Area / Local Flood Risk Zone; review by qualified engineer.
Is factual ground investigation data provided?	Yes	Refer Site Investigation Report by Connaughts Site Investigation Ltd within Appendix 2 of the BIA.
Is monitoring data presented?	No	Groundwater was not encountered during the SI works. Monitoring is recommended to be carried out before the works in order to plan temporary works.
Is the ground investigation informed by a desk study?	Yes	Refer Appendix 1 of the BIA
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Refer Section 4 of this audit
Is a geotechnical interpretation presented?	No	Insufficient information provided; SI report states that a qualified engineer should review and provide design parameters; bearing capacity is inconsistently presented between reports.
Does the geotechnical interpretation include information on retaining wall design?	No	Parameters have been adopted within structural calculations but values are inconsistent.

Item	Yes/No/NA	Comment
Are reports on other investigations required by screening and scoping presented?	No	Interpretative geotechnical; temporary works sketches indicating sequencing, propping and final formation levels.
Are the baseline conditions described, based on the GSD?	No	Permeable / impermeable site area; utilities within zone of influence.
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	However, requires appropriate review following additional assessment.
Are estimates of ground movement and structural impact presented?	Yes	However, assessment adopted is not undertaken in accordance with the guidance; indicated settlements are in excess of what has been adopted in the GMA.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	GMA to be updated; interpretative geotechnical assessment; temporary works information; permeable / impermeable site area; flood risk.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	Further need for mitigation measures can be assessed only once the requested additional assessment is complete.
Has the need for monitoring during construction been considered?	Yes	
Have the residual (after mitigation) impacts been clearly identified?	No	The residual impacts can be confirmed only after the updated assessments are complete.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Assessment can be made only after receiving the documents/information requested under Appendix 2.

Item	Yes/No/NA	Comment
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	Permeable / impermeable site area; flood risk.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	GMA to be updated; interpretative geotechnical assessment; temporary works information; permeable / impermeable site area; flood risk.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	The assessment is not accepted; it requires updating and review.
Are non-technical summaries provided?	Yes	Refer Section 1 of the BIA.

## **4.0 DISCUSSION**

- 4.1. The Basement Impact Assessment (BIA) and associated structural assessment has been carried out by Bini Struct-E Limited and the individuals concerned in its production are stated in Section 2.1 of the BIA document. The qualifications of the authors are not in accordance with LBC guidance.
- 4.2. The BIA references superseded LBC Guidance. The BIA should be undertaken in accordance with Current guidance, CPG Basements 2018.
- 4.3. The existing property consists of a two storey terraced house with a partial basement below the front main part of the house. A full height single storey basement under the full building footprint plus lightwells is proposed, including deepening of the existing basement. The proposal includes excavating up to 3.0m below ground level (bgl).
- 4.4. The following information is required to evidence assessments: permeable / impermeable site area plans (current and proposed); utilities information within the zone of influence of the works; an outline construction plan; outline temporary works sketches, indicating sequencing and propping arrangements; conceptual site model.
- 4.5. A site investigation, comprising trial pits with hand augered boreholes to 5.0m bgl, indicates that the site is underlain by about 0.8m of Made Ground over London Clay. The site investigation has identified the depth of existing foundations.
- 4.6. Complete interpretative geotechnical information is not provided. Design parameters in accordance with the GSD Appendix G3 should be presented. It's noted that soil strength parameters have been obtained from disturbed samples, which should be considered in any design line proposed. The range of proposed bearing capacities is not considered reasonably conservative, based on the site data obtained, and is presented inconsistently between documents. (e.g. between the BIA, site investigation and structural calculations) and are inconsistently adopted within the structural calculations.
- 4.7. Groundwater was not encountered during the site investigation works. It's stated that there will be no impact to the wider hydrogeological environment. This should be confirmed by an appropriately qualified hydrogeologist.
- 4.8. It's stated there will be a negligible overall increase in impermeable site area, by approximately 3m<sup>2</sup>, due to the proposed development, and that there will be no impact to the wider hydrological environment. This should be confirmed by an appropriately qualified engineer, and evidenced with clear site plans (as 4.3).

- 4.9. It is proposed to use underpinning to form the basement. As 4.3, additional structural information is required indicating temporary works sequencing and propping proposals.
- 4.10. Structural calculations have been provided for review. These should be reviewed once geotechnical interpretive information has been provided, with design parameters consistently adopted within the calculations.
- 4.11. A ground movement assessment (GMA) is presented, which adopts the methodology proposed in CIRIA C760. Although an embedded piled wall is not proposed, it is accepted that this methodology will provide a reasonable estimate of ground movements when applied to underpinning, which could then be applied as part of the impact assessment. However, the GMA is not accepted, because:
- Whilst the C760 methodology has been adopted, it has not been undertaken fully in accordance with the guidance. Contour plots indicating the zone of influence of the works should be provided and hogging / sagging profiles along the structural walls assessed should be presented to justify final values used for assessment.
  - The C760 assessment has adopted factors based on a high stiffness wall. Based on the information provided to date, the basement retaining walls will be cantilevered and un-propped in the permanent case (ie there is no concrete ground floor slab proposed). On this basis, the assessment should adopt low stiffness wall parameters or further commentary for the basis of assessment should be provided.
  - The GMA does not consider the effects of settlement and heave. A separate settlement / heave assessment has been provided, with settlements at the Party Wall (i.e. 8mm) indicated to be greater than those used within the impact assessment (i.e. 6mm).
  - The basis of the settlement / heave assessment is unclear, since no geotechnical parameters or calculations are presented.
  - The impact assessment should consider movement of the highway and underlying utilities.
  - The assessment should consider potential impacts to the flat above and neighbouring properties (all properties within the zone of influence).
- 4.12. It's stated that a system of regular monitoring will be adopted during construction of the substructure to assess any possible structural movement in the adjacent buildings. The scheme should be reviewed and revised, if required, once geotechnical, structural and GMA information has been re-evaluated.
- 4.13. The BIA notes that Sumatra Road flooded in 2002. The Flood Risk Assessment (FRA) states that there has been no historical flooding within 500m. Neither the BIA nor FRA have identified that the site is within a Local Flood Risk Zone or a Critical Drainage Area. Information within

the LBC Strategic Flood Risk Assessment indicates potential for impact from surface water and sewer flooding. The FRA should be reviewed and assessment confirmed by an appropriately qualified engineer.

## 5.0 CONCLUSIONS

- 5.1. The qualifications of the authors are not in accordance with LBC guidance.
- 5.2. The BIA should be undertaken in accordance with Current guidance, CPG Basements 2018.
- 5.3. The additional information and assessments required, as detailed in section 4, should be provided.
- 5.4. The BIA has confirmed that the proposed basement will be founded within London Clay. Complete interpretative geotechnical information should be provided
- 5.5. It's stated that there will be no impact to the wider hydrogeological environment. This should be confirmed by an appropriately qualified hydrogeologist.
- 5.6. It's stated there will be no impact to the wider hydrological environment. This should be confirmed by an appropriately qualified engineer.
- 5.7. It is proposed to use underpinning to form the basement. Insufficient information has been provided, as detailed in section 4.
- 5.8. Structural calculations have been provided for review. These are queried, as detailed in section 4.
- 5.9. The ground movement assessment (GMA) is not accepted, as detailed in Section 4.
- 5.10. The FRA should be reviewed and assessment confirmed by an appropriately qualified engineer.
- 5.11. Queries and requests for additional information are summarised in Appendix 2. Until the additional information and assessment requested is provided, the BIA does not comply with the requirements of CPG Basements.

## **Appendix 1: Residents' Consultation Comments**



Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Healey, Susan & Philip	-	04.01.2019	Obstruction to ground water flow, flood risk	Section 4
Barbaglia, Steven	-	04.01.2019	Flood Risk	Section 4
Whiting and Mondragon		05.01.2019	Ground movement, flood risk, surface water run-off	Section 4

## **Appendix 2: Audit Query Tracker**

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	The qualifications of the authors are not in accordance with LBC guidance. Assessments should be provided by appropriately qualified engineers / geologists.	Open	
2	BIA	The BIA should be undertaken in accordance with Current guidance, CPG Basements 2018.	Open	
3	BIA	The following information required to evidence assessments: permeable / impermeable site area plans; utilities information within zone of influence; outline construction plan; outline temporary works sketches; conceptual site model.	Open	
4	Stability	Interpretative geotechnical information should be provided and used consistently throughout the reports and assessments, as 4.6.	Open	
5	Stability	Structural calculations to be reviewed and adopt consistent geotechnical parameters, as 4.10	Open	
6	Stability	GMA to be reviewed, considering 4.11.	Open	
7	Stability	Monitoring strategy to be reviewed, considering 4.12.	Open	
8	Hydrology	The FRA should be reviewed and assessment confirmed, as 4.13.	Open	

### **Appendix 3: Supplementary Supporting Documents**

None

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