

**Ground Floor Flat, 53 Howitt Road,
Belsize Park, NW3 4LU**

**Basement Impact Assessment
Audit**

For

London Borough of Camden

Project Number: 12727-57
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April 2018

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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 Ground Floor Flat, 53 Howitt Road, Belsize Park NW3 4LU (planning reference 2017/7050/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 engineering consultants Concept Consultancy. The author does not possess suitable qualifications for comment on hydrogeology surface flow and flooding. Evidence of suitable engineering geology expertise has not been provided.
- 1.5. The BIA has confirmed that the proposed basement will be founded within the London Clay formation.
- 1.6. The proposed works involve lowering the existing basement floor and constructing a new single storey basement to extend beneath the full footprint of the building, with lightwells to the front and rear. The proposal states that existing perimeter walls shall be underpinned at the front and rear, with new retaining walls constructed inside the existing party wall foundations. Further detail of the underpinning, retaining wall design and floor slab is required.
- 1.7. The Desk Study including historic maps and details of the site walkover survey, Factual Ground Investigation Report, water monitoring data and Geotechnical Interpretation are required to be presented for review. It is accepted that the basement is unlikely to intercept the groundwater.
- 1.8. Analysis has been undertaken of horizontal and vertical ground movements, and potential damage is predicted to fall into Burland Categories 1 and 2. The assumptions used in these calculations are to be presented as they do not reflect industry accepted values, nor the settlement predicted due to loading. Category 2 damage is not acceptable under the London Plan.
- 1.9. Proposals are provided for a movement monitoring strategy during excavation and construction, which should be linked to the GMA. Mitigation measures are described as 'underpinning where necessary'. Further detail is required.

- 1.10. The BIA states that there are no existing basements at surrounding properties, however one resident's response refers to a basement excavation in the vicinity. Clarification is required and the potential cumulative impact assessed.
- 1.11. The BIA states that no change to impermeable areas will result from the development, and therefore the existing surface water drainage system will be utilised.
- 1.12. The hydrological assessment requires review as the site is plotted incorrectly on the Camden Watercourses Figure 11 map, included in Section 3.4 of the BIA. The BIA concludes development will not impact on the wider hydrogeology of the area and is not in an area subject to flooding, which requires confirmation.
- 1.13. It is accepted that there are no surrounding slopes to the development.
- 1.14. Queries and requests for clarification are described in Section 4 and summarised in Appendix 2. Until they are resolved, it cannot be confirmed that the BIA complies with the requirements of the CPG.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 2 March 2018 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 53 Howitt Road, Belsize Park NW3 4LU and reference 2017/7050/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.
 - Local Plan 2017, 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;
- 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 *"Construction of a basement extension with front and rear lightwells and a replacement rear extension from basement level following the demolition of the existing rear extension."*

- 2.6. Although a response from a resident suggest the building is historic and listed, the Audit Instruction confirmed that 53 Howitt Road does not involve, or is a neighbour to, listed buildings.
- 2.7. Once the consultation period had closed (15 March 2018) CampbellReith accessed LBC's Planning Portal on 30 March 2018 and 09 April 2018 and gained access to the following relevant documents for audit purposes:
- Basement Impact Assessment Report (BIA), reference 2841, dated November 2017 by Concept Consultancy;
 - Planning Application Drawings by Simon Miller Architects consisting of:
 - Location Plan reference 437 OS 00, dated December 2017;
 - Existing Plans and Sections numbered 437 EX 01-05 and 437 EX 07, dated December 2017;
 - Proposed Plans and Sections numbered 437 PL00 – PL05, dated December 2017;
 - Design & Access Statement, reference 437, dated 22 December 2017 by Simon Miller Architects;
 - Structural Drawings and Notes, reference 2841, numbered 1, 2, 3, 50, 51, 52, 800, 810, 811, dated November 2017 by Concept Consultancy Structural Designers Limited;
 - Planning Comments and Responses.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	Qualifications of author insufficient for comment on water environment and evidence of expertise in ground engineering not provided as per CPG4.
Is data required by Cl.233 of the GSD presented?	Yes	Screening and scoping carried out.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	No	Further details of the proposal are required.
Are suitable plan/maps included?	No	Site location arrow does not point to the site on the 'watercourses' map. No historic maps are presented for review.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	No	See above
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?	No	As noted above, on the 'watercourses' map extract the arrow does not point to the site. This has led to incorrect assumptions about distance to nearest watercourse.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Is a conceptual model presented?	No	However the BIA is written so as to clearly lay out the anticipated ground and groundwater conditions.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	No	Confirmation required on distance to nearest watercourse.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Is factual ground investigation data provided?	No	A ground investigation by Ashdown Site Investigation Ltd. is referred to in the BIA however the factual report including engineer's logs and laboratory testing results are not included.
Is monitoring data presented?	No	Groundwater monitoring is mentioned in the report however factual monitoring data has not been included.
Is the ground investigation informed by a desk study?	No	No ground investigation or desk study reports are included with the BIA, however a desk study is mentioned in the non-technical summary.
Has a site walkover been undertaken?	No	A site walkover is not mentioned in the BIA.
Is the presence/absence of adjacent or nearby basements confirmed?	No	The BIA states that adjacent properties do not have basements, however one resident's response refers to excavation of a basement 'in front' of the property. Clarification is required.
Is a geotechnical interpretation presented?	No	Site specific geotechnical interpretation is required, to include ground condition parameters, design assumptions and outline calculations to support proposals.
Does the geotechnical interpretation include information on retaining wall design?	No	Geotechnical interpretation not included.

Item	Yes/No/NA	Comment
Are reports on other investigations required by screening and scoping presented?	No	Desk Study, Factual and Interpretative Ground Investigation reporting is required.
Are the baseline conditions described, based on the GSD?	Yes	However, clarification is sought regarding adjacent/nearby basements as detailed above.
Do the base line conditions consider adjacent or nearby basements?	No	Clarification is sought regarding adjacent basement.
Is an Impact Assessment provided?	Yes	Section 3.2.2 of the BIA details predicted vertical and horizontal displacements.
Are estimates of ground movement and structural impact presented?	Yes	Predicted vertical and horizontal movements from the underpinning based on CIRIA C580 are presented, however, further clarification is required.
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	Mitigation measures identified in the BIA comprise underpinning the surrounding buildings where necessary, to be assessed at the design stage. Further details are required.
Has the need for monitoring during construction been considered?	Yes	A monitoring regime with trigger values is presented. However, these trigger values should be linked to the Ground Movement Assessment.
Have the residual (after mitigation) impacts been clearly identified?	Yes	Damage of Burland Category 1 and 2 is predicted. This exceeds the damage permitted by the local plan.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	The Ground Movement Assessment requires clarification and geotechnical assumptions are required to be presented for review.

Item	Yes/No/NA	Comment
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	No changes to the extent of hardstanding are proposed.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	GMA requires revision.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	No	
Are non-technical summaries provided?	Yes	One non-technical summary is presented at the beginning of the BIA report.

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out by Concept Consultancy engineering consultants and the individual concerned in its production is a chartered structural engineer. The qualifications do not comply with those required by the CPG for comment on surface flow and flooding, and no evidence of experience in engineering geology is presented.
- 4.2. The LBC Instruction to proceed with the audit identified that the basement proposal does not either involve a listed building or is adjacent to listed buildings. This is confirmed by reference to Camden's Website.
- 4.3. The property is a four storey terraced house with three above ground levels and one partial basement. The proposal is to lower an existing basement area at the rear of the development site by 1.6 metres and excavating the front portion of the site to the same level by the excavation of 3.7 metres of soil below the existing ground floor level, forming a single storey basement beneath the entire building footprint with front and rear lightwells.
- 4.4. A ground investigation at the site comprising 1 No. window sampler borehole with water monitoring installation and 2 No. foundation inspection trial pits is described in the BIA. Made Ground was encountered to 0.45 - 1.2m bgl, underlain by London Clay formation to 10.0 m bgl, the full depth of exploration. The borehole was dry at the time of drilling, however water was subsequently recorded in the standpipe at 2.74m bgl, thought to be perched water. It is agreed that sufficient information has been gathered on the site specific ground conditions to allow decisions to be taken on construction methodology.
- 4.5. The Desk Study including historic maps and details of the site walkover survey, Factual Ground Investigation Report, water monitoring data and Geotechnical Interpretation are required to be presented for review.
- 4.6. Section 3.4 of the BIA relates to surface water features, and while the Camden GSD maps are referred to, an extract given of Figure 11 (Barton Lost Rivers of London) plots the site location incorrectly. The site is in fact much closer to a watercourse than stated, and the BIA should be reviewed and updated accordingly.
- 4.7. Existing foundations are identified as stepped brick supported on strip foundations within the London Clay at 0.45 m and 1.2 m below existing ground level. The proposal states that existing perimeter walls shall be underpinned at the front and rear, with new retaining walls constructed inside the existing party wall foundations. A requirement for underpinning depths of c 3.50m is shown in the structural drawings. The London Clay is identified as the bearing stratum. Outline calculations to demonstrate the feasibility of the underpinning and retaining wall design are required.

- 4.8. A Ground Movement Analysis has been presented predicting maximum ground movement of 1.5mm and building damage corresponding to Burland Category 2. It is not accepted that this is a suitably conservative estimate of movement and the assessment of vertical movement does not take into account the 15mm settlement predicted due to load, nor movement associated with construction. Furthermore, Category 2 exceeds the damage permitted by the local plan. It is stated that little heave will be experienced; this statement requires justification be carried out considering all buildings and infrastructure in the zone of influence. The BIA states that any potential impact on the foundations of the surrounding buildings will be addressed at design stage, and underpinning carried out where necessary. The CGP impacts and any necessary mitigation are to be identified as part of the BIA process.
- 4.9. A movement monitoring strategy with trigger values for out of plan movements is identified in the BIA, however these should be linked to the GMA. Presently the monitoring permits up to 11mm movement before the methodology is reviewed.
- 4.10. It is identified in the BIA that the surrounding buildings do not have basements, and therefore a differential depth of approximately 1.0m at the front and 2.5m to the remainder of the house will exist on completion of the excavation. This does not allow for the excavation of the lightwell and contradicts structural drawings showing around 3.50m underpinning .A response received from a local resident mentions a basement excavation 'in front' of 53 Howitt Road. Although the assumption of the absence of a basement is conservative, comment on this is requested.
- 4.11. The BIA states that due to the absence of a continuous water table at the level of proposed excavation, the development will not impact on the local hydrogeology. This is concurred with.
- 4.12. The BIA has shown that the development is not near any known watercourses, and it will not therefore impact on the wider hydrogeology of the area, any other watercourses, springs or the Hampstead Heath Pond chain catchment area. However, these conclusions should be reviewed once the site location given on Figure 11 has been updated, as detailed above.
- 4.13. It is accepted that the proposal will not impact on the amount of hardstanding present on site, and that the existing connections to the combined public sewer on Howitt Road will be re-used. The provided documents state that an attenuation system is not applicable in this case, which is agreed.
- 4.14. It is accepted that there are no slope stability concerns regarding the proposed development and it is not in an area prone to flooding.

5.0 CONCLUSIONS

- 5.1. The BIA has been prepared by engineering consultants Concept Consultancy. The author does not possess suitable qualifications for comment on hydrogeology surface flow and flooding. Evidence of suitable engineering geology expertise has not been provided.
- 5.2. The BIA has confirmed that the proposed basement will be founded within the London Clay formation.
- 5.3. The proposed works involve lowering the existing basement floor and constructing a new single storey basement to extend beneath the full footprint of the building, with lightwells to the front and rear. The proposal states that existing perimeter walls shall be underpinned at the front and rear, with new retaining walls constructed inside the existing party wall foundations. Further detail of the underpinning, retaining wall design and floor slab is required.
- 5.4. The Desk Study including historic maps and details of the site walkover survey, Factual Ground Investigation Report, water monitoring data and Geotechnical Interpretation are required to be presented for review. It is accepted that the basement is unlikely to intercept the groundwater.
- 5.5. Analysis has been undertaken of horizontal and vertical ground movements, and potential damage is predicted to fall into Burland Categories 1 and 2. The assumptions used in these calculations are to be presented as they do not reflect industry accepted values, nor the settlement predicted due to loading. Category 2 damage is not acceptable under the London Plan.
- 5.6. Proposals are provided for a movement monitoring strategy during excavation and construction, which should be linked to the GMA. Mitigation measures are described as 'underpinning where necessary'. Further detail is required.
- 5.7. The BIA states that there are no existing basements at surrounding properties, however one resident's response refers to a basement excavation in the vicinity. Clarification is required and the potential cumulative impact assessed.
- 5.8. The BIA states that no change to impermeable areas will result from the development, and therefore the existing surface water drainage system will be utilised.
- 5.9. The hydrological assessment requires review as the site is plotted incorrectly on the Camden Watercourses Figure 11 map, included in Section 3.4 of the BIA. The BIA concludes development will not impact on the wider hydrogeology of the area and is not in an area subject to flooding, which requires confirmation.
- 5.10. It is accepted that there are no surrounding slopes to the development.

- 5.11. Queries and requests for clarification are described in Section 4 and summarised in Appendix 2. Until they are resolved, it cannot be confirmed that the BIA complies with the requirements of the CPG.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Guadalupe	2 nd Floor Flat, 53 Howitt Road	27 February 2018	Concerned that excavation will exacerbate existing subsidence at property. Concerned that cumulative impact of basement construction in the vicinity will cause ground movement. Concerned that structural integrity of historic listed building will be compromised.	See audit paragraphs 4.8 to 4.10.

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	Qualifications do not comply with requirements of CPG.	Open	
2	BIA	Required to be submitted for review: -Desk Study information including historic maps and Site Walkover Survey -Factual Ground Investigation report including engineers logs and water monitoring data -Geotechnical interpretation	Open	
3	Hydrogeology	Check site location on GSD Watercourses map and update BIA as necessary.	Open	
4	Stability	Outline retaining wall design required including geotechnical assumptions and further details of any necessary mitigation strategy.	Open	
5	Stability	Ground Movement and building damage assessment require revision.	Open	
6	Stability	Movement monitoring strategy to be linked to GMA.	Open	
7	Stability	Re-assess proximity to other basements and consider cumulative impacts if necessary.	Open	

Appendix 3: Supplementary Supporting Documents

None

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