

Flat 1, 43 Hillfield Road,
London, NW6 1QD

Basement Impact Assessment
Audit

For
London Borough of Camden

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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 Flat 1, 43 Hillfield Road (planning reference 2018/5111/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 Basement Impact Assessment (BIA) has been prepared by engineering consultants and the author's qualifications meet CPG Basements 2018 requirements.
- 1.5. The building is not listed or adjacent to listed buildings and it is not within a conservation area. The site is within 5m of a highway or pedestrian right of way.
- 1.6. The proposal includes the demolition of the existing rear extension at ground floor, construction of a new rear extension, lowering the existing basement and extending it to the front and rear of the building.
- 1.7. A site investigation has been completed and it confirms that the proposed basement will be founded in London Clay.
- 1.8. Groundwater was recorded at depths between 1.64m and 2.06m below ground level during monitoring visits. The proposed development will not impact the wider hydrogeological environment.
- 1.9. LBC flood mapping indicates Hillfield Road was one of the streets flooded in 2002 flood event. Proposed flood risk mitigation measures to be adopted within the development should be stated.
- 1.10. The proposed basement will be formed by reinforced concrete underpins and basement slab. Outline design calculations have been provided, however, the depth of the basement is not consistent throughout the BIA report. Further clarification is required. Clarification is also sought on the depth of the neighbouring basements.
- 1.11. An outline structural methodology and proposed sequence of works have been provided. This should be further developed by the appointed contractor prior to the works on site.

- 1.12. A ground movement assessment has been undertaken which identifies Burland Category 1 (very slight) to adjacent properties. However, the assessment is not considered reasonably conservative, as detailed in Section 4. The assessment should also state the movements and impact to the Highway and any underlying utilities.
- 1.13. A brief movement monitoring strategy has been provided. However, a more detailed monitoring strategy linked to the predicted ground movements should be presented.
- 1.14. An indicative works programme has been provided. A detailed programme should be provided by the appointed contractor at a later date.
- 1.15. It is accepted that the development will not impact on the wider hydrological environment and is not in an area subject to groundwater flooding.
- 1.16. Queries and requests for information are discussed in Section 4 and summarised in Appendix 2. Until the additional information and assessments requested are presented, the BIA does not meet the requirements of Camden Planning Guidance: Basements.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 9 November 2018 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for Flat 1, 43 Hillfield Road, London, NW6 1QD, Camden Reference 2018/5111/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: Basements (March 2018)
 - Camden Development Policy (DP) 27: Basements and Lightwells.
 - Camden Development Policy (DP) 23: Water.
 - Local Plan Policy (2017): 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 "Excavation of basement extension; Erection of ground floor rear extension and front garden bin store."
- 2.6. The Audit Instruction also confirmed Flat 1, 43 Hillfield Road and neighbouring buildings are not listed buildings and do not reside within a Conservation Area.

2.7. CampbellReith accessed LBC's Planning Portal on 18/12/2018 and gained access to the following relevant documents for audit purposes:

- Planning Statement + Design and Access Statement dated 17 October 2018 by Studio McLeod.
- Camden Basement Policy A5: Requirements Statement dated 17 October 2018 by Studio McLeod.
- Location Plan, Site Plan, Existing Plan and Elevation Drawings dated 17 October 2018 by Studio McLeod.
- Demolition Plan and Elevation Drawings dated 17 October 2018 by Studio McLeod.
- Proposed Plan and Elevation Drawings dated 17 October 2018 by Studio McLeod.
- Basement Impact Assessment dated 28 September 2018 by Symmetrys Consulting Engineers Ltd.
- Existing Tree Position Drawing dated 17 October 2018 by Studio McLeod.

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	All documents have been provided. However, the drawings do not have dimensions and levels. Levels in text are inconsistent. There is no information of the 1 st floor structure and the adjacent properties' basements. See Audit sections 4.4, 4.7 and 4.8.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	BIA and supporting documents.
Are suitable plan/maps included?	Yes	BIA sections 2 and 3.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	BIA sections 2 and 3.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Justification provided for all 'No' answers.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Justification provided for all 'No' answers.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	The BIA does not refer to LBC SFRA Map, which shows Hillfield Road as one of the streets flooded in 2002 flood event. See Audit section 4.11
Is a conceptual model presented?	Yes	Refer to BIA Appendix 1 – Ground Investigation & Assessment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Refer to BIA Section 5.3

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Refer to BIA Sections 5.1 and 5.2.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	Hydrology Scoping to be reviewed. See Audit section 4.11.
Is factual ground investigation data provided?	Yes	Provided within BIA Appendices.
Is monitoring data presented?	Yes	See Ground Investigation Report pages 1 and 15.
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	Yes	A photographic record is provided in the BIA Appendix B.
Is the presence/absence of adjacent or nearby basements confirmed?	No	See Audit section 4.8.
Is a geotechnical interpretation presented?	Yes	Refer to BIA Appendix 1 – Ground Investigation & Assessment
Does the geotechnical interpretation include information on retaining wall design?	Yes	Refer to BIA Appendix 1 – Ground Investigation & Assessment
Are reports on other investigations required by screening and scoping presented?	No	The adjacent properties' basements are to be confirmed. See Audit section 4.8.
Are the baseline conditions described, based on the GSD?	No	The proposed basement depth is to be clarified and the adjacent properties' basements are to be confirmed. See Audit sections 4.4 and 4.8.
Do the base line conditions consider adjacent or nearby basements?	No	The adjacent properties' basements are to be confirmed. See Audit section 4.8
Is an Impact Assessment provided?	Yes	See Audit section 4.13.

Item	Yes/No/NA	Comment
Are estimates of ground movement and structural impact presented?	Yes	See Audit section 4.13.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	See Audit sections 4.13 and 4.14
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	Flood risk mitigation measures to be stated; further mitigation may be required once dimensions confirmed / GMA confirmed.
Has the need for monitoring during construction been considered?	Yes	BIA Section 7.4 provides a brief description of the movement monitoring proposal. See Audit section 4.15.
Have the residual (after mitigation) impacts been clearly identified?	No	See Audit sections 4.13 to 4.15.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	See Audit sections 4.7, 4.8, and 4.13 to 4.15.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	See Audit section 4.12.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	See Audit sections 4.7, 4.8, and 4.13 to 4.15.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	See Audit section 4.13. However, the basis of the GMA is not considered reasonably conservative.
Are non-technical summaries provided?	Yes	Refer to BIA Section 1.0.

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been prepared by Symmetrys Ltd and consists of the main assessment report and the Ground Investigation & Assessment prepared by LMB Geosolutions Ltd. The qualifications of the individuals involved meet the requirements of CPG Basements.
- 4.2. The LBC Instruction to proceed with the audit identified that the proposal does not involve a listed building or neighbour any listed buildings. The planning statement by Studio McLeod also states that the property is not within a conservation area.
- 4.3. The proposal is the refurbishment of an existing three storey terrace house above a basement at 43 Hillfield Road. The works include the demolition of the rear extension at ground floor, the construction of a new rear extension, lowering of the existing basement and also extending it to the front and rear of the building.
- 4.4. The proposed basement consists of a single storey construction formed by lowering the existing basement of the building. The basement will also be extended below the rear and front gardens to form lightwells. However, the information in the BIA does not include the conclusive dimensions of the proposed basement, with proposed basement level stated as being at between 3.00m and 4.00m below ground level (bgl) in different sections of the reports. Further clarification on the basement dimensions is required.
- 4.5. Intrusive ground investigation works were undertaken between 27th and 30th July 2018 by LMB Geosolutions Ltd. The investigation consisted of 1 No. continuous flight auger borehole and 1 No. dynamic (windowless) sampler borehole (to depths of 8.00m bgl) to the front and rear of the property, and 5 No. hand excavated trial pits. The investigation confirms that the site is underlain by Made Ground, proven to 1.20m bgl, over London Clay.
- 4.6. Groundwater monitoring was undertaken following the completion of the fieldworks on 7th August and 22nd August 2018. The BIA states that no groundwater strikes were encountered during the investigation works but it was recorded at depths of between 1.64m and 2.06m bgl during the subsequent monitoring visits. The groundwater is stated not to represent a continuous aquifer, which is accepted, and there will be no impact to the wider hydrogeological environment.
- 4.7. The BIA states that the proposed basement will be formed by reinforced concrete underpins below the existing masonry walls. They will be constructed using the traditional method of underpinning in a hit and miss sequence. The underpins will be connected to the reinforced concrete basement slab which acts as lateral props to the underpins. The ground investigation report by LMB Geosolutions Ltd states that the basement slab is assumed to be founded at

3.00m bgl within the London Clay, however, the main BIA report and the architectural and structural drawings do not have any dimension or level of the basement slab. The retaining wall calculation section shows the basement is founded at 4.00m below the ground level and text within the Symmetrys report state a founding depth at 4.00m bgl. Further clarification on the extent and the depth of the basement is required.

- 4.8. Outline design calculations for the reinforced concrete underpins and the basement slab have been provided. However, the BIA states that the extent and the depth of the adjacent properties' basements are to be confirmed. Further investigations should be undertaken to confirm the adjacent buildings' basements, or reasonably conservative assumptions clearly stated, as these may affect the design of the basement walls.
- 4.9. An outline structural methodology and proposed sequence of works are included in Section 7.0 of the BIA. The proposal has considered temporary and permanent loading conditions. It is noted that the appointed contractor will be responsible for the design of the temporary supports, which will be required during the underpinning works.
- 4.10. As part of the slope stability screening assessment in Section 4.2, it was stated there is no evidence of such shrink-swell subsidence effects on site. It is accepted that at the proposed founding levels, between 3.00m and 4.00m bgl, the foundations will not be influenced by shrink-swell movements.
- 4.11. The surface water and flooding screening assessment in section 4.3 of the initial BIA suggests that the site is at low risk of surface water flooding. However, there is no discussion regarding the LBC SFRA Map, which shows Hillfield Road as one of the streets flooded in 2002 flood event. Proposed flood risk mitigation measures to be adopted within the development should be stated.
- 4.12. It is accepted that the development will not impact on the wider hydrological environment.
- 4.13. It is noted that a ground movement assessment (GMA) and damage category assessment has been carried out to assess effects on the surrounding properties. The BIA states that the damage impact to all the adjacent buildings is Burland Category 1 (very slight). The following queries are raised:
- The maximum depth of the basement has been assumed to be 3.00m bgl, which is inconsistent with the proposals.
 - The GMA has ignored potential movements from installation effects of the underpins. This is not considered to be reasonably conservative.
 - The GMA is based on the assumption of high support stiffness wall. However, the wall does not have lateral support at ground level at some locations where there is no floor

structure to provide lateral restraint. The assessment therefore is not considered to address the worst case sections.

- The GMA does not consider damage to the flats within 43 Hillfield Road, above the proposed development, which should be included.
- 4.14. The damage impact assessment as provided in the appendix H does not include an assessment of the highway, which is within the zone of influence of the development. This assessment should be provided.
- 4.15. A brief movement monitoring strategy is provided in Section 7.4 of the BIA. Horizontal and vertical movement trigger levels have been proposed. Prior to construction, a monitoring strategy linked to the predicted ground movements should be agreed with adjacent property owners, including the owners of the 1st floor and above, as part of the Party Wall agreements.

5.0 CONCLUSIONS

- 5.1. The authors' qualifications meet the requirements of CPG Basements.
- 5.2. The building is not listed or adjacent to listed buildings and it is not within a conservation area.
- 5.3. Further clarification on the extent / dimensions / depth of the proposed basement is required. The depth of neighbouring basements should be stated, or reasonably conservative assumptions should be clearly stated.
- 5.4. A site investigation confirms the site is underlain by Made Ground over London Clay.
- 5.5. There will be no impact to the wider hydrogeological environment.
- 5.6. It is accepted that the development will not impact on the wider hydrological environment. Proposed surface water flood risk mitigation measures to be adopted within the development should be stated.
- 5.7. An outline structural methodology and proposed sequence of works have been provided.
- 5.8. A ground movement assessment has been undertaken which identifies Burland Category 1 (very slight) to adjacent properties. However, the assessment is not considered reasonably conservative, and should address the comments in Section 4.
- 5.9. A brief movement monitoring strategy has been provided. A final strategy should be agreed as part of the Party Wall agreements.
- 5.10. An indicative works programme has been provided. A detailed programme should be provided by the appointed contractor at a later date.
- 5.11. Queries and requests for information are summarised in Appendix 2. Until the additional information and assessments requested are presented, the BIA does not meet the requirements of Camden Planning Guidance: Basements.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Stability	Depth and extent of the proposed basement to be confirmed	Open – Refer to Sections 4.4 and 4.7	
2	Stability	Depth and extent of adjacent properties' basements to be confirmed.	Open – Refer to Section 4.8	
3	Stability	Further justification is required regarding shrink-swell subsidence in the local area.	Open – Refer to Section 4.10	
4	Stability	Ground movement assessment to consider the comments in Section 4.	Open – Refer to Section 4.13 and 4.14	
5	Hydrology	Further justification is required regarding surface water and flooding screening. Proposed flood risk mitigation measures to be adopted within the development should be stated.	Open – Refer to Section 4.11	

Appendix 3: Supplementary Supporting Documents

None

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