CampbellReith
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Flat 2, 12 Lyndhurst Gardens
NW3 5NR

Basement Impact Assessment
Audit

For

London Borough of Camden

Project Number: 12985-62
Revision: D1

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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 Flat 2, 12 Lyndhurst Gardens, NW3 5NR (planning reference 2019/3147/P & 2019/3920/L). 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. It is proposed to construct a single storey basement underneath the rear half of the property, utilising two-stage underpinning techniques. The basement proposal involves a Grade II listed building and is in the neighbourhood of other Grade II listed buildings.

1.5. The BIA has been prepared by Symmetrys with supporting documents prepared by LMB Geosolutions and Card Geotechnics. The qualifications of the authors of the hydrological and hydrogeological assessments have not been demonstrated to be in accordance with LBC guidance.

1.6. Screening and Scoping assessments have been undertaken, supported by a desk study broadly in accordance with LBC guidance.

1.7. A site investigation has been undertaken. The BIA has confirmed that the proposed basement will be founded within London Clay.

1.8. An indicative construction programme has been presented.

1.9. A ground movement assessment (GMA) is presented indicating damage to neighbouring structures will be a maximum of Burland Category 1 (Very Slight). The assessment requires further clarification, as detailed in Section 4.

1.10. Proposals are provided for a movement monitoring strategy during excavation and construction. The proposed trigger levels are presented inconsistently between the reports and structural drawings and should be clarified.

1.11. SUDS strategies are proposed to mitigate the impact to the wider hydrological environment. Further to 1.5, these should be confirmed by an appropriately qualified author.

1.12. The site is identified as being at high risk from surface water flooding. Flood risk assessment and appropriate mitigation measures should be presented.

1.13. It is accepted that the development will not impact on the wider hydrogeology of the area, subject to confirmation that the BIA has been reviewed by a chartered hydrogeologist (as 1.5).

1.14. Non-technical summaries have been presented.

1.15. Queries and requests for information are discussed in Section 4 and summarised in Appendix 2. Until the additional information requested has been presented, the BIA does not meet the requirements of CPG: Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 3 July 2019 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 12 Lyndhurst Gardens, London, NW3 5NR.

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;

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 "*Single storey rear extension to replace existing single storey rear extension; two storey side extension to replace existing two storey side extension (smaller footprint); creation of basement below new extensions and part of host building, with side lightwell; removal of upper ground floor bay window and replacement with 3x windows; demolition of detached outbuilding; internal alterations to lower ground floor level*"

2.6. The subject property and the neighbouring properties are Grade II Listed.

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

- Basement Impact Assessment (Reference: 19050, dated 11 June 2019) prepared by Symmetrys Ltd, including;
    - Structural Engineer's Statement and Calculations by Symmetrys Ltd;
    - Ground Investigation Report dated May 2019 by LMB Geosolutions Ltd;
    - Ground Movement Assessment 9Rev 1) dated June 2019 by Card Geotechnics Ltd;
    - SuDS Strategy (Rev A) dated May 2019 by Symmetrys Ltd;
    - Planning Application Drawings;
- Design and Access statement (dated 01 June 2019) prepared by LBMV Architects;
- Arboricultural Survey & Impact Assessment (Reference: AIA/MF/036/19, dated 24 April 2019) prepared by Marcus Foster Arboricultural Design & Consultancy;
- Follow-up Pre-Application Advice (Reference: 2018/2697/PRE, dated 09 October 2018) by LBMV Architects;
- Photographs of the existing structure prepared by LBMV Architects;
- Planning Consultation 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 the BIA. Author qualifications in regard to hydrological and hydrogeological assessments should be demonstrated to be in accordance with CPG Basements.
Is data required by Cl.233 of the GSD presented?	Yes	
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	
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?	Yes	Surface water flood risk noted
Is a conceptual model presented?	Yes	

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?	Yes	
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	Flood risk assessment and appropriate mitigation to be presented.
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	
Is a geotechnical interpretation presented?	Yes	SI Report / GMA
Does the geotechnical interpretation include information on retaining wall design?	Yes	SI Report / GMA
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?	Yes	
Is an Impact Assessment provided?	Yes	

Item	Yes/No/NA	Comment
Are estimates of ground movement and structural impact presented?	Yes	Refer Appendix 4 of the BIA.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	No	FRA required; hydrological and hydrogeological assessments should be confirmed by appropriately qualified authors.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	FRA and mitigation measures
Has the need for monitoring during construction been considered?	Yes	Noted that trigger values are inconsistently presented between reports and drawings.
Have the residual (after mitigation) impacts been clearly identified?	No	FRA and mitigation measures
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Queries discussed in Section 4.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	To be confirmed by appropriately qualified author.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	Queries discussed in Section 4.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	However, queries discussed in Section 4.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by Symmetrys Ltd using individuals whose qualifications are not in accordance with LBC guidance for the hydrological and hydrogeological asssessments. CPG Basements explicitly states that the assessments should be carried out by experienced engineering professionals who hold qualifications relevant to the matters being considered. The qualifications required by the authors are listed under Section 4.7 of CPG Basements (March 2018).

4.2. The LBC Instruction to proceed with the audit identified that the basement proposal involved a Grade II listed building and the BIA confirms this. The property is also adjacent to other Grade II listed buildings.

4.3. The host property is a four-storey detached building understood to be sub-divided into flats. It has no existing basement. The application is for the refurbishment of Flat 2 which is a 2-bed flat located on the eastern side of the building at ground and first floor level, with private access to a rear garden. It is proposed to construct a new single storey rear extension at ground floor level with a new basement (formed at approximately 3.40m to 3.90m below ground level (bgl)) towards the rear half of the property, extending into the garden.

4.4. It should be noted that no development is proposed beneath the west of the property (beneath Flat 1). The BIA has confirmed that the neighbouring buildings (No.10 and No.14) do not have basements. A Network Rail Tunnel is located 28m bgl and 2.50m beyond the proposed footprint of the new basement and under the rear garden.

4.5. Screening and Scoping assessments have been undertaken, supported by a desk study broadly in accordance with LBC guidance.

4.6. A site specific ground investigation has been carried out, followed by groundwater monitoring on one occasion. From the borehole log provided it is understood that the ground conditions comprise Made Ground over a thin layer of Head Deposits / weathered London Clay underlain by London Clay. Groundwater was found within the London Clay strata at approximately 4.30m bgl.

4.7. Interpreted geotechnical parameters are presented within the ground investigation report and ground movement assessment (GMA).

4.8. Two-stage underpinning is the proposed method of basement construction, propped in the temporary and permanent cases, and founded within the London Clay. The drawings provided within Appendix A of the BIA indicate the sequence of the proposed works. An indicative construction programme is provided within Section 2.3.10 of the BIA.

4.9. A GMA is presented indicating damage to neighbouring structures will be a maximum of Burland Category 1 (Very Slight). However, the following clarifications are required:

- The GMA makes no allowance for the two stages of underpinning proposed. Typically vertical and horizontal movements of between 5mm and 10mm per stage of underpinning would be anticipated.
- The GMA has back calculated limiting maximum movements to ensure damage is maintained within a maximum of Category 1. The 3mm limiting maximum horizontal movement required for the assessment of No.14 is not considered feasible, especially considering the two stages of underpinning proposed.
- The maximum vertical deflection adopted for Flat 1, No.12 (Figure 10, section C-C') is not considered representative or in accordance with the guidance, as the intercept between the chord and the predicted deflection curve has not been taken at the same horizontal distance along the section / wall being assessed. Consequently, the maximum deflection appears to have been under estimated.
- The building is Grade II Listed, as are the neighbouring properties. The damage assessment should explicitly evaluate all the structural walls within the zone of influence of the works, noting also the flats above the proposed development within the same building.

4.10. Proposals for a movement monitoring strategy (with trigger levels) during excavation and construction are provided within Section 7.6 of the BIA and in the structural drawings. Its noted that the trigger levels are inconsistently presented between the report and the drawings. Following clarification of the GMA, the monitoring strategy should be confirmed.

4.11. An Arboricultural report has been included as a part of the application. Section 5.5 of the BIA states that two trees in the rear garden are to be felled and the proposed works are also within the protection zone for a third tree. It is stated that necessary planning permission shall be obtained prior to the removal of any trees.

4.12. The impermeable site area will slightly increase as a result of the development. SUDS strategies are proposed to mitigate the impact to the wider hydrological environment. Further to 4.1, these should be confirmed by an appropriately qualified author.

4.13. The site is identified as being at high risk from surface water flooding. Flood risk assessment and appropriate mitigation measures should be presented.

4.14. It is accepted that the development will not impact on the wider hydrogeology of the area, subject to confirmation that the BIA has been reviewed by a chartered hydrogeologist (as 4.1).

4.15. Non-technical summaries have been presented.

5.0 CONCLUSIONS

5.1. The qualifications of the authors of the hydrological and hydrogeological assessments should be demonstrated to be in accordance with LBC guidance

5.2. The basement will be formed by two-stage underpinning. Temporary and permanent structural information is provided.

5.3. A site investigation has confirmed that the proposed basement will be founded within the London Clay. Interpretative geotechnical parameters are presented.

5.4. A ground movement assessment (GMA) is presented indicating damage to neighbouring structures will be a maximum of Burland Category 1 (Very Slight). The assessment requires further clarification, as detailed in Section 4.

5.5. The monitoring strategy should be updated to be consistent between reports and drawings, following review of the GMA.

5.6. SUDS strategies are proposed to mitigate the impact to the wider hydrological environment. These should be confirmed by an appropriately qualified author.

5.7. The site is identified as being at high risk from surface water flooding. Flood risk assessment and appropriate mitigation measures should be presented.

5.8. It is accepted that the development will not impact on the wider hydrogeology of the area, subject to confirmation that the BIA has been reviewed by a chartered hydrogeologist.

5.9. Queries and requests for information are summarised in Appendix 2. Until the additional information requested has been presented, the BIA does not meet the requirements of CPG: Basements.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

No relevant comments

Appendix 2: Audit Query Tracker

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Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	The qualifications of the authors of the hydrological and hydrogeological assessments should be demonstrated to be in accordance with LBC guidance	Open	
2	Land Stability	A ground movement assessment (GMA) is presented indicating damage to neighbouring structures will be a maximum of Burland Category 1 (Very Slight). The assessment requires further clarification, as detailed in Section 4.	Open	
3	Land Stability	The monitoring strategy should be updated to be consistent between reports and drawings, following review of the GMA.	Open	
4	Hydrology	SUDS strategies are proposed to mitigate the impact to the wider hydrological environment. These should be confirmed by an appropriately qualified author.	Open	
5	Hydrology	The site is identified as being at high risk from surface water flooding. Flood risk assessment and appropriate mitigation measures should be presented.	Open	
6	Hydrogeology	It is accepted that the development will not impact on the wider hydrogeology of the area, subject to confirmation that the BIA has been reviewed by a chartered hydrogeologist.	Open	

Appendix 3: Supplementary Supporting Documents

None

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