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consulting engineers

5 – 5a Camden Road, Camden, London NW1 9LG

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12985-87

Revision: D1

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Appendices

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 (BIA) submitted as part of the Planning Submission documentation for 5-5a Camden Road, London NW1 9LG, Camden Reference 2019/5015/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 LBH Wembley Engineering. The qualifications of the authors are in accordance with LBC guidance.

1.5. The proposal is to construct a single basement level below the full footprint of the building at No. 5 Camden Road. The maximum excavation depth is 5.5m below existing ground level.

1.6. No site investigation has been carried out at the site. However, its noted that site investigation has been carried out at adjacent properties by the same engineering team, indicating the development will be formed within the London Clay.

1.7. The proposed development will not impact the wider hydrogeological environment.

1.8. A full utility search should be carried out and further consideration of the impact to the sewer crossing the rear of site is required.

1.9. A Ground Movement Assessment (GMA) is presented. However, the conclusions are queried, as detailed in Section 4. Additionally, impacts to properties 8, 10 and 12 Kentish Town Road should be provided.

1.10. Proposed monitoring trigger levels should be revised to reflect the parameters and assumptions used in the GMA.

1.11. The proposed development will not impact the wider hydrological environment.

1.12. Discussion and requests for further information are presented in Section 4 and summarised in Appendix 2. Until the information requested is presented, the BIA does not meet the criteria of CPG Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 14 November 2019 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 5-5a Camden Road, London NW1 9LG, Camden Reference 2018/5015/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): Basements.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.
- The 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; and,

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 planning portal describes the proposal as: *"Excavation of basement under No. 5".*

The planning portal also confirmed the site lies within the Camden Town Conservation Area but neither the site or neighbouring properties are listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal in December 2019 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment (ref LBH4577 Ver 1.1) dated September 2019 by LBH Wembley Engineering.
- Existing and proposed elevations and plans by Ambigram Architects dated September 2019.
- Planning Statement by SM Planning, dated September 2019.
- Outline SUDS Strategy (ref LBH4577suds Ver 1.0) dated September 2019 by LBH Wembley Engineering.
- Proposed Basement Details drawing (reference 3640/650 rev P3) dated 30/05/19 by Gledsdale Associates.

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	Utilities information to be provided.
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 plans/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	The site has been identified as being within Critical Drainage Area 3. A SUDS strategy is provided.
Is a conceptual model presented?	Yes	Ground conditions based on investigations carried out on adjacent sites.

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?	N/A	No impacts identified.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	The site has been identified as being within Critical Drainage Area 3. A SUDS strategy is provided.
Is factual ground investigation data provided?	Yes	Based on adjacent sites' data.
Is monitoring data presented?	No	No groundwater was encountered.
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	BIA identifies recent basement construction in the properties to the rear of the site, involving underpinning to 4m. BIA identifies adjacent property 3a has been granted permission to construct a basement using underpinning techniques.
Is a geotechnical interpretation presented?	Yes	
Does the geotechnical interpretation include information on retaining wall design?	Yes	
Are reports on other investigations required by screening and scoping presented?	Yes	Outline SuDS Strategy by LBH Wembley Engineering presented.
Are baseline conditions described, based on the GSD?	Yes	

Item	Yes/No/NA	Comment
Do the base line conditions consider adjacent or nearby basements?	Yes	However, use of underpinning on boundary with 3a to be clarified
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	Yes	However, further clarification is requested (see Section 4).
Is the Impact Assessment appropriate to the matters identified by Screening and Scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	Clarification of GMA and Monitoring Strategy required. SUDs strategy provided.
Has the need for monitoring during construction been considered?	Yes	Clarification of GMA and Monitoring Strategy required.
Have the residual (after mitigation) impacts been clearly identified?	Yes	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Clarification of GMA and Monitoring Strategy required.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	No increase in impermeable site area and SUDs strategy provided. A sewer is identified under the extension at the rear of the property – impacts to be clarified.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	Cumulative heave movements presented. Impacts to be clarified.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	However, GMA to be clarified.
Are non-technical summaries provided?	Yes	Executive summary provided.

4.0 DISCUSSION

4.1. The BIA and an Outline SuDS Strategy has been prepared by LBH Wembley Engineering. The qualifications of the authors of the reports prepared by LBH Wembley Engineering are in accordance with CPG Basements.

4.2. The site comprises two three-storey terraced buildings with a single storey extension to the rear of each property, occupying the entire footprint of the site. At ground floor level the two properties have been modified to create a single space used as a commercial unit. The Planning Statement identifies that the site is within the Camden Town Conservation area and is identified as a building which makes a positive contribution to the area.

4.3. The proposal is the construction of a single basement level below the entire footprint of No. 5 Camden Road (not extending below No. 5a). The proposed basement will have an internal headroom of 4.9m. The total basement excavation will extend to 5.5m depth beneath the existing ground floor.

4.4. The BIA includes the majority of the information required from a desk study in line with the GSD Appendix G1. Screening and Scoping assessments are presented.

4.5. No intrusive site investigation has been completed at the site and the BIA indicates that a series of trial pits will be undertaken at the beginning of the construction programme in order to confirm the expected ground conditions. The BIA references investigations carried out by the same engineering team at adjacent properties (3a Camden Road and 8 Kentish Town Road) and provides a description of the expected ground conditions at the site (Made Ground over London Clay Formation).

4.6. No groundwater was encountered in the adjacent investigations and groundwater is not expected beneath the site. Considering the London Clay Formation is designated as Unproductive Strata, there will be no impact from the proposed development to the wider hydrogeological environment.

4.7. Section 6.3 of the BIA provides retaining wall design parameters for the London Clay and Section 7.2 provides derived soil parameters for the Ground Movement Assessment (GMA).

4.8. The proposed development will not increase the impermeable site area but is within a Critical Drainage Area (Group 3-003). The site is not located within a Local Flood Risk Zone and is at low risk of surface water flooding. An Outline SUDs Strategy is presented. The proposed development will not impact the wider hydrological environment. A detailed drainage design should be agreed with LBC and Thames Water.

4.9. The Outline SuDS Strategy identifies a sewer crossing the rear of the site, and the BIA indicates a manhole is present underlying the single-storey extension at the rear of No. 5a. The BIA also indicates that utilities are anticipated to be adjacent to the front of the property, beneath the highway.

4.10. Utilities within the zone of influence of the works should be identified and the BIA should confirm impact assessments for any utilities affected. Utility asset owners should be contacted, as applicable, to agree asset protection requirements. It should be confirmed if the sewer to the rear of the property will be de-commissioned / re-routed.

4.11. The new basement slab will be founded in the London Clay Formation. The basement will be formed by underpinning techniques using a 'hit and miss'. An Outline Basement Construction Methodology including temporary works has been presented in Section 6 of the BIA. The underpin bays are indicated to be in short widths not exceeding 1,000mm. This conflicts with the Proposed Basement Details drawing, which indicates bays will be 1,300mm wide. The drawing should be updated in line with the BIA.

4.12. Two stages of underpinning are proposed for the walls bounding No. 5 Camden Road and Camden Road itself. Two stages of underpinning are proposed for No. 3a Camden Road although the BIA suggests a basement development is proposed for this property that may be completed at the time of basement construction. A conservative approach assuming no basement is present at 3a has been adopted for assessment purposes.

4.13. The adjacent properties to the rear, No. 8 and 10-12 Kentish Town Road, have been identified as having been recently underpinned to allow basement construction to 4m depth. A single stage of underpinning is recommended for this party wall, however the GMA subsequently omits these properties from assessment, suggesting the party wall will have been already underpinned to the required depth. Assessment of impacts to these properties should be confirmed.

4.14. A GMA is presented in Section 7 of the BIA. The GMA predicts Category 1 damage (Very Slight) for No. 5a Camden Road and Category 0 damage (Negligible) for No 3a Camden Road. However, the following queries are raised, which require clarification:

- Whilst its noted that the adjacent developments generally have basements, minimising the underpinning requirements, its stated that up to 5.0m of underpinning to be constructed in two-stages may be required. Section 3.1 states that 5mm of settlement per stage of underpinning may result and that heave effects have been ignored when calculating maximum deflection ratios (BIA Section 7.6) in the short term. On that basis, further clarification on how the maximum deflection ratios were calculated should be provided.
- The GMA adopts 5mm horizontal deflection for underpinned walls (BIA Section 7.5). Considering a reasonably conservative assessment approach, 5mm to 10mm of horizontal

deflection per stage of underpinning is anticipated to be likely. Therefore, for the two-stage underpinning proposed, current horizontal deflections adopted appear to be low. Further justification for adopting a 5mm horizontal movement limit should be provided or further assessment presented adopting higher horizontal movements to demonstrate that a maximum of Category 1 damage can be feasibly maintained.

- As 4.13, impacts to No. 8, 10 and 12 Kentish Town Road should be presented.
- Cumulative post construction heave effects have been provided (Section 7.4) due to construction at the site and neighbouring developments. It should be confirmed whether these will have any adverse damage impacts to neighbouring properties.
- As 4.10, impacts to utilities should be confirmed.

4.15. An Outline Structural Monitoring Plan is presented in Section 9 of the BIA. Structural monitoring of the perimeter party walls is recommended to be undertaken during construction. Trigger levels are proposed; however, the recommended threshold of “10mm in any direction” is higher than the maximum 5mm movement identified for the underpinning and adopted in the GMA. It is recommended that the trigger levels are revised to reflect the updated GMA to ensure a maximum of Category 1 damage is sustained to neighbouring properties.

5.0 CONCLUSIONS

5.1. The qualifications of the authors of the BIA report are in accordance with LBC guidance.

5.2. The proposal is to construct a single basement level below the full footprint of the building.

5.3. Site investigation has been carried out at adjacent properties by the same engineering team, indicating the development will be formed within the London Clay.

5.4. The proposed development will not impact the wider hydrogeological environment.

5.5. Impacts to surrounding utilities should be provided, including the impact to the sewer crossing the rear of site.

5.6. A Ground Movement Assessment (GMA) is presented. However, the conclusions are queried, as detailed in Section 4.

5.7. Proposed monitoring trigger levels should be revised to reflect the parameters and assumptions used in the GMA.

5.8. The proposed development will not impact the wider hydrological environment.

5.9. Requests for further information are summarised in Appendix 2. Until the information requested is presented, the BIA does not meet the criteria of CPG Basements.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
-	Conservation Area Advisory Committee	25 November 2019	Concerns regarding the depth of the basement and the effect of the basement in conjunction with adjacent proposed and existing basements.	Section 4.

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status/Response	Date closed out
1	Land Stability	Please identify the utilities within the zone of influence of the works (BIA Section 7.6.3), confirm impact assessments for any utilities affected, and confirm that utility asset owners will be contacted, as required, re asset protection requirements.	Open	
2	Land Stability	For clarity, please confirm that the sewer to the rear of the property (BIA Section 6.4) is within the proposed basement area and will therefore be de-commissioned / re-routed, as required.	Open	
3	Land Stability	Please clarify GMA calculations and movements from two-stage underpinning, as detailed in Section 4.	Open	
4	Land Stability	Please clarify damage impacts to 8 and 10-12 Kentish Town Road.	Open	
5	Land Stability	Cumulative post construction heave effects have been provided (BIA Section 7.4) due to construction at the site and neighbouring developments. Please indicate if these will have any adverse damage impacts to neighbouring properties.	Open	
6	Land Stability	An Outline Basement Construction Methodology including temporary works has been presented in Section 6 of the BIA. The underpin bays are indicated to be in short widths not exceeding 1,000mm. This conflicts with the Proposed Basement Details drawing, which indicates bays will be 1,300mm wide. The drawing should be updated in line with the BIA.	Open	

Appendix 3: Supplementary Supporting Documents

None

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