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Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12727-33

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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 25 Old Gloucester Street, London WC1N 3AF (planning reference 2017/3997/P). The basement is considered to fall within Category C 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 carried out by Parmabrook and GEA and the authors have suitable qualifications.

1.5. The building is generally three storey high, with a five storey section at the front of the site and a single storey extension constructed to the rear of the building. There is an existing single level basement below the main building and no basement under the rear extension building. The redevelopment proposal includes demolishing the existing single storey extension, and construction of a new two storey plus basement extension. New floor levels will also be added to the central section of the building.

1.6. The subject property and immediate neighbours to the north and south are Grade II listed properties.

1.7. A site specific desk study, Screening, Scoping and Impact Assessment are presented.

1.8. A site investigation has confirmed that the ground conditions comprise Made Ground over Lynch Hill Gravel and London Clay. The groundwater level is indicated to be at 4.5m below ground level (bgl). The BIA recommends further monitoring and trial excavations to confirm this.

1.9. The depth of the existing foundations to the rear extension have been investigated. Along the southern boundary, brick corbelled strip foundations at 1.28m bgl were identified. Foundation depth along the northern and western boundaries has not been confirmed, but excavations indicate they are >1.6m bgl.

1.10. Geotechnical interpretation is provided, including parameters for retaining wall and foundation design.

1.11. The proposed basement will be constructed within the same footprint of the existing rear extension. As a result, the volume of surface water drained to public sewers will not change and there will be no impact to the wider hydrological environment.

1.12. The proposed basement will be founded with the Lynch Hill Gravel, a designated aquifer. Groundwater level has been monitored lower than the proposed basement formation level. There will be no impact to the hydrogeological environment.

1.13. A construction methodology for the basement is presented which indicates underpinning of the Party Wall foundations, followed by construction of the reinforced concrete basement slab and permanent retaining walls. The retaining walls will be propped in the temporary and permanent condition. The proposed basement and underpinning will be founded at a depth of approximately 3.4m below ground level.

1.14. An outline construction programme should be provided.

1.15. A ground movement assessment (GMA) has been undertaken which assumes a maximum of 1m of underpinning and excavation will be required. This is not consistent with the depth of existing foundations (southern boundary) or stated formation level (3.4m bgl). The GMA should be revised to be consistent with the site conditions and proposed works.

1.16. A movement monitoring strategy of surrounding buildings during construction is proposed. The requirements should be reviewed following completion of the GMA.

1.17. There are no impacts relating to slopes at or close to the proposed development.

1.18. Queries and requests for additional information are discussed in Section 4 and summarised in Appendix 2. Until the additional information and assessment requested is presented, the BIA does not meet the requirements of CPG4.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 12th January 2018 to carry out a Category C Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 25 Old Gloucester Street, London WC1N 3AF, planning reference 2017/3997/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;

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 "*Change of use at ground and first floor from D1 to Sui Generis (consisting of D1, A3 and C3 use class). Construction of an extended basement area to the rear, construction of mezzanine level at first floor and; Erection of a ground and first floor rear extension and a 2 storey extension to create second and third floor to provide 6 residential units (Use Class C3).*"

2.6. The Audit Instruction also confirmed that the application involved, or is a neighbour to, listed buildings.

2.7. CampbellReith accessed LBC's Planning Portal on 20th January 2018 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment, Parmarbrook, May 2017 (11 parts/files including GEA report J17059 dated May 2017)
- Planning Statement, Montagu Evans, July 2017
- Draft Construction Management Plan, Buchanan Hartley Architects Limited, 21st June 2017
- Design and Access Statement, Buchanan Hartley Architects Limited, 15th September 2017
- Planning Comments and Response
- Architects General Arrangement Plans & Sections Existing and Proposed drawings number:
    - 0572 (GIA) L0 (Existing Plan Level 0) rev. A
    - 0572 (GIA) L0 (Proposed Plan Level 0) rev. A
    - 0572 (GIA) L0M (Proposed Plan Level 0 Mez) rev. A
    - 0572 (GIA) LB (Existing Plan Level LB) rev. A
    - 0572 (GIA) LB (Proposed Plan Level LB) rev. A
    - 0572 L(DE) 000 (Plan Level 0 Demolitions) rev. B
    - 0572 L(DE) 00B (Plan Level B Demolitions) rev. B
    - 0572 L(DE) 00M (Plan Level M Demolitions) rev. B
    - 0572 L(DE) 011 (Section HH Demolitions) rev. A
    - 0572 L(DE) 012 (Section JJ KK LL Demolitions)
    - 0572 L(EX) 008 (Section BB Existing) rev. A
    - 0572 L(EX) 009 (Section CC Existing) rev. A
    - 0572 L(EX) 010 (Section DD Existing) rev. A
    - 0572 L(EX) 011 (Section EE Existing) rev. A
    - 0572 L(EX) 012 A (Section FF Existing) rev. A
    - 0572 L(EX) 013 A (Section GG Existing) rev. A
    - 0572 L(EX) 014 (Section HH Existing) rev. A
    - 0572 L(EX) 015 (Block Plan)
    - L(--) 004 (Plan Level Roof Proposed) rev. A
    - L(--) 012 (Section CC Proposed) rev. B

- L(--) 014 (Front elevation Section EE Proposed) rev. B
- L(--) 015 (Rear elevation extension Section FF Proposed) rev. C
- L(--) 016 (Rear elevation Section GG Proposed) rev. C
- L(--) 018 (Section JJ KK LL Proposed)
- L(--) 017 (Section HH Proposed) rev. D
- L(--) 011 (Section BB Proposed) rev. D
- L(--) 013 (Section DD Proposed) rev. D

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	An outline construction programme should 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 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	
Is a conceptual model presented?	Yes	However, conceptual model adopted by GEA for assessment should be confirmed as consistent with conditions and proposed works.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	No potential issues were identified at screening stage. No scoping required.
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?	No	St George the Martyr's Church basement extent not confirmed; presence of basement on adjacent building number 26 not confirmed. Both buildings are Grade II. For the purposes of stability assessment, shallow foundations have been assumed.
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?	N/A	
Are the baseline conditions described, based on the GSD?	No	Neighbouring basements, foundation depths, final formation depth to be confirmed and consistently applied to assessments
Do the base line conditions consider adjacent or nearby basements?	Yes	For the purposes of stability assessment, shallow foundations have been assumed where presence of basement unkown.

Item	Yes/No/NA	Comment
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	Yes	Foundation depths and final formation depth to be confirmed and consistently applied to GMA.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	No	Foundation depths and final formation depth to be confirmed and consistently applied to GMA.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	To be confirmed, pending GMA revision.
Has the need for monitoring during construction been considered?	Yes	Strategy to be confirmed, pending GMA revision.
Have the residual (after mitigation) impacts been clearly identified?	No	To be confirmed, pending GMA revision.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	To be confirmed, pending GMA revision.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	To be confirmed, pending GMA revision.
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	Yes	Burland Category 0. To be confirmed, pending GMA revision.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by Parmarbrook engineering consultants in conjunction with Geotechnical & Environmental Associates (GEA), and the individuals concerned in its production have suitable qualifications.

4.2. The LBC Instruction to proceed with the audit identified that the basement proposal either involved a listed building or was adjacent to listed buildings but provided no details. The BIA identified the building as a Grade II listed property. Both north and south neighbouring properties, St George the Martyr's Church and number 26 Gloucester St, are also Grade II listed properties.

4.3. The building is generally three storey high, with a five storey section at the front of the site and a single storey extension constructed to the rear of the building. There is an existing single level basement below the main building and no basement under the rear extension. The redevelopment proposal includes demolishing the existing single storey extension, and construction of a new two storey plus basement extension. New floor levels will also be added to the central section of the building.

4.4. A site specific desk study and ground investigations report is being presented (GEA, ref. J17059, May 2017). Screening, Scoping and Impact Assessments are also presented within this document.

4.5. The existing foundations were investigated. On the southern boundary of the rear extension, it was confirmed that the foundations were at 1.28m bgl and bearing on Made Ground. On the western and northern boundaries the foundation depth was unconfirmed, with the wall extending to full depth of the trial pit of 1.6m bgl. Internally, within the existing basement area, columns' foundation was encountered at a depth of 0.87m below slab level and bearing on Made Ground.

4.6. A site investigation has confirmed that the ground conditions comprise Made Ground (to approximately 3.0m bgl) over Lynch Hill Gravel (to 6.5m bgl) and London Clay (to >18m bgl). A monitoring standpipe was installed, and the groundwater level monitored with one visit following the initial site investigation at 4.5m bgl. The BIA recommends further monitoring and trial excavations to confirm this.

4.7. Geotechnical interpretation is provided, including parameters for retaining wall and foundation design.

4.8. The proposed basement will be constructed within the same footprint of the existing rear extension. As a result, the volume of surface water drained to public sewers will not change and there will be no impact to the wider hydrological environment.

4.9. The basement and underpinning will be founded in the Lynch Hill Gravel, a designated aquifer, at a depth of approximately 3.4m bgl. Based on the current observation, groundwater is lower than the proposed basement formation level. As there is approximately 3m of gravel below the formation level, the basement structure will allow groundwater flow below it and there will be no impact to the hydrogeological environment.

4.10. A construction methodology for the basement is presented which indicates underpinning of the Party Wall foundations, followed by construction of the reinforced concrete basement slab and permanent retaining walls. The retaining walls will be propped in the temporary and permanent condition. The Party Walls are with 114-118 Southampton Row, 26 Old Gloucester Street and St. George the Martyr's Church.

4.11. Existence of neighbouring basements was only partially confirmed. The BIA indicates that as a conservative approach for the ground movement assessment (GMA), it would be assumed that where the presence of basements is unknown founded in shallow foundations. This approach is considered reasonable.

4.12. The GMA also assumes a maximum of 1m of underpinning and excavation will be required. This is not consistent with the depth of existing foundations (southern boundary) or stated formation level (3.4m bgl) and is not considered a reasonably conservative approach. The GMA should be revised to be consistent with the site conditions and proposed works. It is also noted that the underpinning will be required to excavate through deep Made Ground. The GMA methodology currently assumes idealised stiff cohesive ground conditions and should consider whether this is appropriate for excavation through Made Ground, and whether any additional mitigation measures / contingencies will be required by the contractor to maintain stability.

4.13. A movement monitoring strategy is proposed, including target locations and required actions based on alert levels. It is indicated that the trigger levels will be in agreement with the Party Wall surveyors' requirements. The requirements should be reviewed following completion of the GMA.

4.14. There are no impacts relating to slopes at or close to the proposed development.

4.15. An outline construction programme should be provided.

5.0 CONCLUSIONS

5.1. The BIA authors have suitable qualifications.

5.2. The subject property and immediate neighbours are Grade II listed properties.

5.3. The redevelopment proposal includes demolishing the existing single storey rear extension and construction of a new two storey plus basement extension.

5.4. A site investigation has confirmed that the ground conditions comprise Made Ground over Lynch Hill Gravel and London Clay. The groundwater level is indicated to be at 4.5m bgl.

5.5. Geotechnical interpretation is provided, including parameters for retaining wall and foundation design.

5.6. The basement and underpinning formation level is at approximately 3.4m bgl, within a designated aquifer. There will be no impact to the hydrogeological environment.

5.7. Existing foundations to be underpinned have not been fully exposed. Assessments should assume conservative foundation depths.

5.8. A ground movement assessment (GMA) has been undertaken which assumes a maximum of 1m of underpinning and excavation will be required. This is not consistent with the depth of existing foundations (southern boundary) or stated formation level (3.4m bgl). The GMA should be revised to be consistent with the site conditions and proposed works.

5.9. A movement monitoring strategy of surrounding buildings during construction is proposed. The requirements should be reviewed following completion of the GMA.

5.10. The proposed basement will be constructed within the same footprint of the existing rear extension. As a result, the volume of surface water drained to public sewers will not change and there will be no impact to the wider hydrological environment

5.11. An outline construction programme should be provided.

5.12. There are no impacts relating to slopes at or close to the proposed development.

5.13. Queries and requests for additional information are summarised in Appendix 2. Until the additional information and assessment requested is presented, the BIA does not meet the requirements of CPG4.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	General	Outline Construction programme to be provided.	Open	
2	Stability	GMA to be revised based on actual foundation levels and formation depths. GMA should consider stability issues relating to underpinning within Made Ground.	Open	
3	Stability	Monitoring strategy – to be confirmed following revisions to GMA.	Open	

Appendix 3: Supplementary Supporting Documents

None

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