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Basement Impact Assessment Audit

For
London Borough of Camden

Project No.
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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 11 Park Village West (planning reference 2023/2061/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 proposed development comprises the extension of the existing lower ground floor below the garages and the hall. The BIA contains superseded information and discrepancies in the description of the works. The document should be reviewed and updated to provide a consistent description of the scheme and technical details.

1.5 The BIA has confirmed that the proposed basement will be founded within the London Clay and minor groundwater management may be required during the excavation as recommended in the BIA. The geotechnical interpretation requires to be updated for the proposed scheme.

1.6 The hydrogeological assessment included in the BIA should be reviewed by authors with the required qualifications as per the CPG for basements.

1.7 The stability screening and scoping exercise requires revision to reflect the intended removal of a tree. Any impact to neighbouring foundations is to be assessed.

1.8 It is accepted that the hydrology screening has identified no potential impacts to surface water and flooding.

1.9 The basement will be constructed using underpinning techniques. However, structural drawings and calculations should be revised considering the new scheme.

1.10 A Ground Movement Assessment has been presented, however it also refers to the old application and it does not demonstrate that damage can be limited to Burland category 1. Further information is required.

1.11 Outline proposals are provided for a movement monitoring strategy during construction. However, it may need to be revised after the GMA revision.

1.12 It cannot be confirmed that the BIA complies with the requirements of CPG: Basements until the queries raised in Section 4 and summarised in Appendix 2 are addressed.

2.0 INTRODUCTION

2.1 CampbellReith was instructed by London Borough of Camden (LBC) on 11/07/2023 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 11 Park Village West, London, NW1 4AE and Planning Reference No. 2023/2061/P.

2.2 CampbellReith previously submitted an audit report (ref. KBcb-13398-29-131020-F1 11 Park Village West) for an earlier proposal including the construction of a new basement under a section of the existing property and encroaching on the rear garden (planning reference 2019/5484/P). The BIA was accepted as compliant with the relevant policies.

2.3 This current audit considers the revised scheme submitted in 2023 and 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.

2.4 A BIA is required for all planning applications with basements in Camden in general accordance with policies and technical procedures contained within

- Camden Local Plan 2017 - Policy A5 Basements.
- Camden Planning Guidance (CPG): Basements. January 2021.
- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.

2.5 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.

2.6 LBC's Audit Instruction described the planning proposal as "Excavation of basement; erection of replacement single storey rear extension with terrace above; replacement of windows; installation of rooflights and other associated works."

2.7 The Audit Instruction confirmed 11 Park Village West and the neighbouring properties are Grade II* listed buildings.

2.8 CampbellReith accessed LBC's Planning Portal on 09/08/2023 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment including Construction Method Statement (CMS) by QED Structures Ltd, Ref No. 19-167-RV2, dated May 2023.
- Factual Report by Soiltechnics Ltd, ref. STR4808, dated July 2019.
- Arboricultural and Impact Assessment Report by Crown Tree Consultancy Ltd, ref. 10347, dated October 2019.
- Planning Application Drawings by Belsize Achitects:
  - Existing Plans, Sections and Elevations and Proposed Sections, Plans and Elevations dated April 2023.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	Not for the hydrogeology assessment.
Is data required by Cl.233 of the GSD presented?	Yes	Desktop study and ground investigation are undertaken.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	No	Inconsistent information presented.
Are suitable plan/maps included?	Yes	Section 3 of the BIA and architectural drawings.
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?	No	Section 4.2 of BIA. Q4, Q5, Q6 and Q7 should be all answered as Yes.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 4.1 of BIA.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 4.3 of BIA.
Is a conceptual model presented?	Yes	Section 6 of BIA.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	Section 5 of BIA. Q5, Q6 and Q7 have not been brought forward to scoping.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	NA	No items from the screening. However, hydrogeology assessment to be reviewed by professionals holding the required qualifications.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	NA	No items brought forward to scoping.
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	Yes	Section 6 of BIA and factual report.
Is the ground investigation informed by a desk study?	Yes	Section 3 of BIA.
Has a site walkover been undertaken?	Yes	Section 2.2.1 of the BIA.
Is the presence/absence of adjacent or nearby basements confirmed?	No	Assumptions in this regard made in the Ground Movement Assessment (GMA) to be provided.
Is a geotechnical interpretation presented?	Yes	Section 7 of BIA and Ground Investigation (GI) factual report. However it requires to be updated for the current scheme.
Does the geotechnical interpretation include information on retaining wall design?	Yes	As above.
Are reports on other investigations required by screening and scoping presented?	NA	

Item	Yes/No/NA	Comment
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	No	As above.
Is an Impact Assessment provided?	Yes	Section 8 of BIA.
Are estimates of ground movement and structural impact presented?	No	Structural calculations and GMA should be updated to reflect the new scheme.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	Land stability assessment to be updated. Structural calculations and GMA should be updated to reflect the new scheme.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	Temporary works are not discussed in the BIA/CMS. Original GMA predicts up to Category 3 damage. Mitigation required to ensure no worse than Category 1.
Has the need for monitoring during construction been considered?	Yes	Section 7.4 of the BIA. However it may require update after GMA revision.
Have the residual (after mitigation) impacts been clearly identified?	Yes	However to be updated after structural calculations and GMA revision.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	GMA to be revised.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	

Item	Yes/No/NA	Comment
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	As above.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	However, GMA to be revised.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1 The Basement Impact Assessment (BIA) has been carried out by QED Structures and the qualifications of the individuals concerned in its production are not in line with the CPG for basements requirements. The BIA should include authors with the required qualifications for the hydrogeology screening, scoping and impact assessment.

4.2 The BIA includes drawings, calculations and assessments relating to the previous scheme. It also uses the terms 'basement' and 'lower ground floor' interchangeably such that the impacts of the current scheme are not always clear. This is discussed further below.

4.3 The site comprises a three-storey detached residential property with a lower ground floor below most of the building footprint. The site is sloping down to the north at a gradient >7°. The elevation of the ground floor at the front of the property is c. 3m higher than the elevation of the lower ground floor at the back of the property. No. 10 Park Village West to the east is the closest neighbouring property. Both applicant site and neighbouring properties are Grade II* listed buildings.

4.4 The proposed development comprises the extension of the lower ground floor below the ground floor garages and hall on the southeast of the property, adjacent to No 10 Park Village West. The BIA indicates a proposed excavation depth of c. 1.90m bgl (Section 7.3) while noting elsewhere that the proposed development will be approximately 5.70m below ground level (8.1.5).

4.5 Screening and scoping assessments are presented and informed by desk study information. Most relevant figures/maps from the ARUP GSD and other guidance documents are referenced within the BIA to support responses to screening questions. The hydrogeology screening, scoping and impact assessment should be reviewed by professionals with the required qualifications.

4.6 Q4 of the stability screening exercise is answered incorrectly but is carried forward to scoping and identifies that there is no impact to be assessed.

4.7 Q5, Q6 and Q7 should be brought forward to scoping and, if necessary, the impact assessed for each item. Mitigation measures to be presented, if needed.

4.8 A ground investigation was undertaken in September 2019 by Soiltechnics which identified the site to be underlain by Made Ground typically to depth of between 0.10 and 1.50m bgl. Deeper Made Ground was found to in excess of 3.40m bgl in the rear garden which has been terraced historically. Below the Made Ground, London Clay was found to the base of the exploratory holes (to a maximum depth of 20m bgl). The lower ground floor extension will be founded within the London Clay.

4.9 Groundwater was not encountered during drilling but monitored at c. 7.30m bgl, which is understood to be 1.85m below proposed lower ground floor. The BIA states there is the potential for minor groundwater ingress during excavation and the BIA recommends the use of sump pumping to collect any water infiltration.

4.10 It is accepted the site is at very low or low risk of flooding from all the sources. No change in hardstanding areas is proposed and the surface water rates will be generally unchanged from the existing. A Flood Risk Assessment and Drainage Statement have been presented in the BIA identifying that small scale SuDS tank storage systems should be considered for attenuation and recommends the flood resistance and resilient measures should be implemented due to the nature of the site.

4.11 A Construction Method Statement (CMS) is provided outlining sequential construction methodology. The scheme will use underpinning techniques following a 'hit and miss' sequence to construct reinforced concrete L shaped retaining walls around the perimeter of the proposed lower ground floor extension. It is reported that the walls will be propped by the ground floor slab in the permanent case. It is accepted detailed temporary works design will be the responsibility of the specialist contractor; however an outline sequence is required to demonstrate whether the retaining walls will be propped in the temporary case. The GMA suggests a form of top down construction stating that the ground floor remains in place at all times to act as a prop. It is noted structural engineers drawings and calculations presented in Section 10.5 of the BIA still refer to the old scheme and they should be updated.

4.12 Geotechnical parameters, including those for retaining walls, are presented in the BIA and factual report. However, the net bearing capacity within the London Clay wrongly refers to the formation level anticipated for the previous scheme. A new value for the allowable bearing capacity should be presented considering the new formation level and the updated retaining wall calculations validated appropriately.

4.13 A Ground Movement Assessment (GMA) is presented in Appendix 10.4 of the BIA and Section 7.5.3 of the Soiltechnics report. It refers to the previous application and the BIA notes in 8.1 that the conclusions should remain valid. The GMA should be updated to consider the new scheme and include the following:

- Mitigation measures to reduce impacts from Burland category 2 and 3 damage to Burland category 1
- Assumptions on temporary conditions (i.e. propping of the wall in the temporary case) should be confirmed and should be consistent with the CMS
- Assumptions on neighbouring foundations levels should be clearly stated considering the sloping setting of the area
- Full input and output of the software should be presented
- The applicant building is listed and as such it should be included in the GMA.

4.14 As indicated in paragraph 4.4, Q6 should be brought forward to scoping as the arboricultural report recommends one tree to be felled. It should be confirmed whether any neighbouring foundation is within the zone of influence of the tree and an assessment of the impact of tree removal provided if appropriate.

4.15 A movement monitoring proposal has been included in the BIA including preliminary trigger values. These may need to be reviewed following GMA revision. A detailed monitoring strategy may be produced as part of the Party Wall negotiations.

5.0 CONCLUSIONS

5.1 The hydrogeology screening, scoping and impact assessment should be reviewed by authors with the required qualifications as per CPG for basements.

5.2 The BIA contains superseded information (structural drawings and calculations, geotechnical recommendations) and discrepancies in the description of the permanent and temporary works. The document should be reviewed and updated to provide a consistent description of the scheme and technical details.

5.3 The stability screening and scoping exercise requires revision to reflect the intended removal of a tree. Any impact to neighbouring foundations is to be assessed.

5.4 It is accepted the site is at very low or low risk of flooding from all the sources. A Flood Risk Assessment and Drainage Statement has been presented which concludes the development will not increase the flood risk. It is accepted that the hydrology screening has identified no potential impacts to surface water and flooding.

5.5 The basement will be formed mainly by mass reinforced concrete underpinning in a typical 'hit and miss' sequence. Structural drawings and calculations should be updated as noted above. Further information is required to demonstrate that the proposed construction sequence and ground movement assessment assumptions are consistent.

5.6 A GMA is presented but it refers to the old scheme. It is stated in the BIA that the conclusions remain valid. It is noted that the original GMA predicted up to Category 3 damage on the Burland scale which is unacceptable. Mitigation measures to limit damage to Category 1 were provided separately to support the previous application. Further information is required to demonstrate that damage to the host property and neighbouring structure can be limited to Category 1.

5.7 Outline proposals are provided for a movement monitoring strategy during construction. However, outline monitoring strategy to be updated after GMA revision. A detailed monitoring strategy may be produced as part of the Party Wall negotiations.

5.8 It cannot be confirmed that the BIA complies with the requirements of CPG: Basements until the queries raised in Section 4 and summarised in Appendix 2 are addressed.

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Appendix 1

Consultation Responses

None

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Appendix 2

Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	The BIA presents inconsistent information in respect of the scheme and requires to be updated.	Open	
2	Hydrogeology	The hydrogeology screening, scoping and impact assessment should be reviewed by authors with the required qualifications as per CPG for Basements.	Open	
3	Land Stability	The land stability screening, scoping and assessment sections should be reviewed to consider tree removal.	Open	
4	Land Stability	Structural drawings and calculations and geotechnical interpretation should be updated to reflect the new proposal.	Open	
5	Land Stability	Further information required to support Ground Movement Assessment as detailed in Section 4.	Open	
6	Land Stability	Mitigation required to limit predicted damage to Burland category 1	Open	
7	Land Stability	Impact due to tree removal to be assessed.	Open	

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Appendix 3

Supplementary Supporting Documents

None

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