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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 67 Gascony Avenue, NW6 4ND (planning reference 2020/4562/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 (BIA) 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 site layout and the proposed development are described in paragraphs 4.2 – 4.3 of this audit.

1.5. The BIA authors' qualifications are in line with those requested by LBC guidance.

1.6. The screening and scoping assessments are supported by desk study information and a site walkover.

1.7. As requested by the previous audit, a site investigation has been undertaken and the factual report included in the BIA. The proposed basement will bear into the London Clay, which is considered a suitable bearing stratum.

1.8. Information about neighbouring basements is not presented. However, assumptions made in that regard in the BIA are considered conservative and are accepted.

1.9. The Flood Risk Assessment (FRA) states the site is at medium risk from sewer flooding, against which the FRA included adequate mitigation measures to reduce the risk to low level.

1.10. An outline construction sequence is presented in the Construction Method Statement (CMS). It is proposed to construct the new basement using traditional reinforced concrete underpins following a typical 'hit and miss' sequence. Temporary propping is proposed in the short term.

1.11. Geotechnical interpretation based on the site-specific ground investigation is presented in the BIA.

1.12. The Ground Movement Assessment (GMA) confirms that the anticipated damage to neighbouring properties will be within the limits set by LBC's policy.

1.13. It is accepted that there will be no slope stability concerns regarding the proposed development.

1.14. It is accepted that there will be no risk from the proposed development to adversely affect the wider hydrogeological environment.

1.15. Queries and requests for information are summarised in Appendix 2. Considering the additional information presented, the BIA meets the requirements of Camden Planning Guidance: Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 9 November 2020 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 67 Gascony Avenue, London NW6 4ND, Camden Reference 2020/4562/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:

- Camden Local Plan 2017 - Policy A5 Basements.
- Camden Planning Guidance: Basements. March 2018.
- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.

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 "*Erection of single storey side/rear extension; excavation of basement and formation of rear lightwell (Use Class C3)*."

2.6. The Audit Instruction confirmed applicant's property and neighbouring properties are not listed.

2.7. CampbellReith accessed LBC's Planning Portal on 9th December 2020 and gained access to the following relevant documents for audit purposes:

- Screening and Scoping report (BIA) (ref.: 20/32020), dated July 2020, by Site Analytical Services Ltd;
- Existing and proposed plans, elevations and sections, dated January and July 2020, by Ian Wylie Architects Ltd;
- Construction Method Statement (CMS) and structural drawings dated September 2020, by Martin Redston Associates;

- Flood Risk Assessment and Drainage Strategy (FRA), (ref.:1-135), dated October 2020, by Civilistix Ltd.

2.8. CampbellReith issued an initial audit report on 12/12/2020 (NScb13398-64-111220-67 Gascony Avenue-D1) with comments on the above BIA documents.

2.9. In response to the initial audit report and following email exchanges between 09/03/2021 and 22/03/2021, CampbellReith received the revised Site Analytical Services Ltd BIA (rev. 2, dated March 2021).

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?	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	As above.
Are suitable plan/maps included?	Yes	The assessment is supported by suitable drawings of existing and proposed development and by suitable maps to describe the environmental setting.
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	Section 3.8 of the BIA.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 3.8 of the BIA.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 3.8 of the BIA.
Is a conceptual model presented?	Yes	Section 6.0 of the BIA.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.0 of the BIA.

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.0 of the BIA.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.0 of the BIA.
Is factual ground investigation data provided?	Yes	Appendix of the BIA.
Is monitoring data presented?	Yes	Section 5.0 of the BIA.
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	However, assumptions made in that regard are considered conservative.
Is a geotechnical interpretation presented?	Yes	Section 6.0 of the BIA.
Does the geotechnical interpretation include information on retaining wall design?	Yes	As above.
Are reports on other investigations required by screening and scoping presented?	Yes	An FRA and a ground investigation report are presented.
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	No	However, assumptions made in that regard are considered conservative.
Is an Impact Assessment provided?	Yes	Section 4.1 of the BIA.

Item	Yes/No/NA	Comment
Are estimates of ground movement and structural impact presented?	Yes	Section 6.6 of the BIA.
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?	Yes	Mitigation for potential groundwater ingress during excavation and outline temporary works proposal to limit ground movements are presented.
Has the need for monitoring during construction been considered?	Yes	Section 5.1 of the BIA.
Have the residual (after mitigation) impacts been clearly identified?	Yes	The BIA concludes that residual impacts will be negligible.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	See the GMA.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Section 10 of the BIA.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	As above.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	See the GMA.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1. The BIA was undertaken by Site Analytical Services Ltd. The authors' qualifications are presented and are in line with those requested by LBC guidance.

4.2. The site is currently occupied by a residential property which is distributed on three levels of accommodation plus a loft, comprising a lower ground floor (including underground voids and a cellar), upper ground, first and second floor. The property is part of a terrace and has a front and a rear garden.

4.3. The proposed development involves the deepening and the extension of the existing lower ground floor to form a new basement and the construction of a new lightwell extending towards the rear garden. From the information submitted, it is understood that a maximum excavation depth of c.3.50m below ground level (39.15m AOD) is proposed.

4.4. Screening and scoping assessments are presented and informed by desktop study information. As requested by the previous audit, a site walkover was undertaken in accordance with Section 4.18 of CPG Basements. Most of the relevant figures/maps from the Arup GSD and other guidance documents are referenced within the BIA to support responses to the screening questions.

4.5. As requested by the previous audit, a site investigation was undertaken in January 2021 to inform the basement design. One borehole (BH1), was undertaken in the rear garden. The ground investigation encountered Made Ground to a maximum depth of 1.10m bgl. The London Clay underlies the Made Ground to the final depth of the borehole (10.00m bgl).

4.6. Groundwater was not struck during drilling, however it was monitored between 4.53 and 4.14m bgl during two subsequent monitoring visits. The monitored groundwater level is below the proposed formation level. The BIA states that the chosen contractor should have a contingency plan in place to deal with any potential groundwater ingress into the excavation as a precautionary measure. It is accepted that the construction of the basement will not impact the wider hydrogeological environment.

4.7. An FRA has been presented and confirmed that the site is at very low risk from flooding from rivers, seas and reservoirs and from surface water flooding, whereas it is considered to be at medium risk from sewer flooding, against which the FRA included adequate mitigation measures to reduce the risk to a low level. It also confirmed that the proposed development will result in a decrease of c. 11% of total hardstanding surface on site. The FRA presented a drainage strategy which indicated how the proposed surface and foul water drainage regime can be accommodated in full in accordance with the local and national guidance. It must be noted that the final drainage strategy and design will require approval from the local flood authority and Thames Water.

4.8. An outline construction sequence is presented in the Construction Method Statement (CMS). It is proposed to construct the new basement using traditional reinforced concrete underpinning following a typical 'hit and miss' sequence. Temporary propping is proposed in the short term. A central bund will be left in the middle of the basement to allow the underpins to be propped as the construction proceeds.

4.9. The CMS states that the slab will be ground bearing and the existing structure plus the proposed development will exert a pressure on the soil to a maximum of 120kN/m^2. The BIA anticipates a value of 150kPa as allowable capacity for the soil at formation level based on site investigation findings and geotechnical interpretation.

4.10. A geotechnical interpretation based on the ground investigation is presented in the BIA. This includes geotechnical parameters to inform settlement, retaining wall calculations and foundation design.

4.11. A Ground Movement Assessment (GMA) is presented in the BIA as required in the previous audit. Although the BIA does not confirm if neighbouring properties have basements, assumptions made in the GMA in that regard are considered conservative. Ground movements due to underpinning and consequent excavation have been modelled by applying CIRIA C760 curves for excavation and, as such, settlement due to underpin workmanship has been estimated by using the C760 curves for embedded retaining wall installation.

4.12. Whilst the CIRIA approach is intended for embedded retaining walls, it is accepted that the predicted ground movements, which dictate the likely damage, can be within the range typically anticipated for underpinning techniques carried out with good control of workmanship.

4.13. The GMA demonstrates that anticipated damage potentially occurring at neighbouring properties will be within Category 1 (Very Slight) of the Burland Scale as required by LBC's policy. The GMA confirms that there are no existing subterranean assets (including services and tunnels) below the site or within the zone of influence of the basement.

4.14. It is confirmed in the BIA that a ground movement monitoring regime will be implemented throughout construction of the basement, in accordance with current guidance. It is accepted that the detailed monitoring strategy will be developed at a later stage and will include contingency measures and trigger levels.

4.15. It is accepted that there will be no slope stability concerns regarding the proposed development.

5.0 CONCLUSIONS

5.1. The authors' qualifications are presented and are in line with those requested by LBC guidance.

5.2. Screening and scoping assessments are presented, supported by desk study information and a site walkover.

5.3. As requested by the previous audit, a site investigation has been undertaken and the factual report included in the BIA. The proposed basement will bear into the London Clay, which is considered a suitable bearing stratum.

5.4. Information about neighbouring basements is not presented. However, assumptions made in that regard are considered conservative.

5.5. The Flood Risk Assessment (FRA) states the site is at medium risk from sewer flooding, against which the FRA included adequate mitigation measures to reduce the risk to a low level.

5.6. The FRA presented a drainage strategy which indicated how the proposed surface and foul water drainage regime can be accommodated in full in accordance with the local and national guidance.

5.7. An outline construction sequence is presented in the Construction Method Statement (CMS). It is proposed to construct the new basement using traditional reinforced concrete underpinning following a typical 'hit and miss' sequence. Temporary propping is proposed in the short term.

5.8. A geotechnical interpretation based on a site-specific ground investigation is presented. This includes ground parameters for retaining wall design and assessment of the allowable bearing capacity at formation level.

5.9. A Ground Movement Assessment (GMA) is presented which confirms that the anticipated damage potentially occurring at neighbouring properties will be within Category 1 (Very Slight) of the Burland Scale as required by LBC's policy.

5.10. It is accepted that there will be no slope stability concerns regarding the proposed development.

5.11. It is accepted that there will be no risk from the proposed development to adversely affect the wider hydrogeological environment.

5.12. Queries and requests for information are summarised in Appendix 2. Considering the additional information presented, the BIA meets the requirements of Camden Planning Guidance: Basements.

Appendix 1: Residents' Consultation Comments

None relevant to this audit

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA format	The qualifications of the individuals involved in the BIA are not presented and are required.	Closed – See 4.1.	24/03/2021
2	Land stability	The anticipated maximum excavation depth should be stated in the BIA.	Closed – See 4.3.	24/03/2021
3	Land stability and Sub-terranean (Groundwater flow)	Absence/presence of neighbouring basements is not presented and is required.	Closed – See 4.11.	24/03/2021
4	BIA	A site walkover shall be undertaken in accordance with Section 4.18 of CPG Basements	Closed – See 4.5.	24/03/2021
5	Sub-terranean (Groundwater flow)	An assessment on the potential for the proposed development to adversely affect the wider hydrogeological environment is not presented and is required.	Closed – See 4.4 – 4.6.	24/03/2021
6	Impact Assessment	A site investigation should be undertaken in accordance with LBC guidance.	Closed – See 4.5 - 4.6.	24/03/2021
7	Structural proposal	Clarification on basement slab typology is required.	Closed – See 4.9.	24/03/2021
8	Land stability	A geotechnical interpretation based on a site investigation is not presented and is required. It should include anticipated allowable bearing capacity at formation level and parameters for retaining wall design.	Closed – See 4.10.	24/03/2021
9	Impact Assessment	A GMA and a damage assessment are not presented and are required.	Closed – See 4.11. – 4.13	24/03/2021
10	Impact Assessment	Any mitigation measures, if required, and any residual impacts should be clearly presented.	Closed	24/03/2021

Appendix 3: Supplementary Supporting Documents

None

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