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34 Hollycroft Avenue, London, NW3 7QL

Basement Impact Assessment Audit

For
London Borough of Camden

Project No.
13693-87

Date
September 2023

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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 submitted as part of the Planning Submission documentation for 34 Hollycroft Avenue (planning reference 2022/3800/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 qualifications of the individuals involved in the production of the land stability and hydrology assessment are in accordance with LBC guidance.

1.5 The proposal includes the extension of the existing building to the rear and the construction of a single storey basement beneath the footprint of the extended property.

1.6 Screening and scoping assessments are presented, supported by desk study information.

1.7 A site investigation has been undertaken indicating the basement will be founded in Claygate Beds, which is considered a suitable founding stratum.

1.8 An outline drainage strategy including Sustainable Drainage Strategy (SuDS) assessment has been presented as part of the BIA indicating no increase in surface water flood risk.

1.9 The Screening Assessment has identified the historic surface water features and springlines within 100m of the site and potential impacts to these features are considered negligible. It is accepted that the development will not have a significant impact on the hydrology of the area.

1.10 It is accepted that the development will not have a significant impact on the hydrogeology of the area.

1.11 Geotechnical parameters to inform design have been provided and are accepted.

1.12 It is accepted that the development will not have a significant impact on the surrounding land stability.

1.13 The basement is to be formed utilising mass concrete underpinning. The Ground Movement Assessment (GMA) and damage assessment demonstrate damage to neighbouring buildings to be Burland Category 1 (Very Slight) or lower, which is in line with LBC policy requirements.

1.14 Groundwater monitoring is recommended to continue before and during construction to inform temporary works design.

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 the 18th of November 2022 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 34 Hollycroft Avenue, London, NW3 7QL, planning reference 2022/3800/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 (CPG): Basements. January 2021.
- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.
- Redington & Frognal Association Sub-surface Water Features Mapping. Arup report. Revision A, 1 April 2016.
- Redington & Frognal Neighbourhood Plan. March 2021.

2.4 The BIA should demonstrate that schemes:

- maintain the structural stability of the building and neighbouring properties;
- avoid adversely affecting drainage and run off or causing other damage to the water environment;
- 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 *"Proposed single storey basement level beneath the footprint of the existing house and the rear extension granted under ref. 2022/0800/P".*

2.6 CampbellReith accessed LBC's Planning Portal on the 12th of December 2022 and gained access to the following relevant documents for audit purposes:

- Ground Investigation Report and Basement Impact Assessment by Ground & Water Limited, ref: GWPR4636/BIA&GIR, dated March 2022.
- Arboricultural Impact Assessment Report by Martin Dobson Associates, ref: R29, dated September 2022.

- Structural Design, Construction Sequence and Temporary Works by Vincent and Rymill Consulting Engineers, ref: unknown, issue 1, dated August 2022.
- Existing Site Plan, Floor Levels and Elevation and Sections by 5d Architects Ltd.
- Proposed Architectural Drawings by 5d Architects Ltd:
  - Proposed Site Plan (Lower Ground Floor), ref: 1571 – PL02 Rev -, dated March 2022;
  - Proposed Site Plan (Ground Floor), ref: 06.952.09 Rev -, dated June 2022;
  - Proposed Floor Plans, ref: 06.952.10 Rev -, dated June 2022;
  - Proposed Elevations, ref: 06.952.12 and 1.13 Rev -, dated June 2022; and
  - Proposed Sections, ref: 06.952.14 and .15 Rev -, dated June 2022.
- Consultation responses.

2.7 CampbellReith issued the first revision (D1) of this BIA audit in December 2022. To address the comments raised in the D1 revision, the following documents were received:

Addendum Basement Impact Assessment by LBHGEO Consulting Engineers, ref.:LBH4696bia, revision 1.0, dated August 2023.

SuDS Technical Note by Water Environment Ltd, ref.:23003-SWD-TN-01, revision C01, dated March 2023.

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	
Are suitable plan/maps included?	Yes	All maps to support screening are included in the BIA (Figures).
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 5.1.3 of the BIA addendum. It has been reviewed by a qualified professional.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 5.1.1 of the BIA addendum. Assessment of historic water features and springlines now presented.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 5.1.2 of the Bia addendum. It has been review by the relevant qualified professional.
Is a conceptual model presented?	Yes	Sections 6 of the BIA addendum.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 5.2.3 of the BIA addendum.

Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 5.2.1 of the BIA addendum.
Hydrology Scoping Provided?	Yes	Section 5.2.2 of the BIA addendum. No items carried forward to scoping.
Is scoping consistent with screening outcome?	Yes	
Is factual ground investigation data provided?	Yes	Appendix C of the BIA.
Is monitoring data presented?	Yes	Section 5.4 of the BIA.
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	Yes	Sections 2.2 of the BIA.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Land stability screening scoping. No. 36 is considered to have a basement.
Is a geotechnical interpretation presented?	Yes	Section 7 of the BIA addendum.
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 outline drainage strategy including SuDS proposal has been presented.
Are the baseline conditions described, based on the GSD?	Yes	Groundwater assessment updated.
Do the base line conditions consider adjacent or nearby basements?	Yes	Land stability screening scoping. No. 36 is considered to have a basement.
Is an Impact Assessment provided?	Yes	Section 9 of the BIA addendum.
Are estimates of ground movement and structural impact presented?	Yes	Sections 8 of the BIA addendum.
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	Outline drainage strategy/mitigation measures on surface water flooding presented. Mitigation measures on hydrogeology and land stability presented.
Has the need for monitoring during construction been considered?	Yes	Section 10 of the BIA addendum.
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?	Yes	
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?	Yes	
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	
Are non-technical summaries provided	Yes	

4.0 DISCUSSION

4.1 The BIA has been carried out by Ground & Water Limited and an addendum to their BIA has been produced by LHBGEO. The qualifications of the individuals concerned with the production of the addendum have been demonstrated to meet the requirements of CPG Basements.

4.2 The site is occupied by a large three-storey residential semi-detached brick building with a front and rear garden. The property fronts onto Hollycroft Avenue to the northeast and is attached to No. 32 to the west and bounded by No. 36 to the east. The BIA addendum indicates No. 36 to have a c. 3m deep basement underlying the entire footprint of the building.

4.3 The proposals include the extension of the property to the rear and construction of a single storey basement underneath the entire footprint of the proposed building. Formation level for the proposed basement will be at c. 101m OD which will require an excavation of approximately 3.70m at its deepest point. The basement will be constructed using a single lift of underpinning.

4.4 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 and addendum to support responses to screening questions. Relevant Redington & Frognal Neighbourhood Plan in regard to historic water features and springlines has been reviewed and assessed.

4.5 The BIA states that the site is at low to very low probability of flooding from all sources. However, the proposed development will increase the overall proportion of hardstanding areas and the site is within a critical drainage area. An outline drainage strategy including a SuDS assessment has been presented. The proposed SuDS measures for the development have been demonstrated to result in a reduction in the surface water runoff rates. so that there will not be an increase in downstream surface water flooding risk.

4.6 A site investigation was undertaken by Ground & Water. Site works comprised two boreholes undertaken at the front and rear of the property to a maximum depth of 8.00m and one foundation inspection trial pit to c. 0.40m below ground level (bgl). Made Ground was encountered to a maximum depth of 0.90m bgl where one borehole was terminated due to the presence of obstructions. The Claygate Beds of the London Clay Formation was encountered below the Made Ground which was proved to full depth of the investigation. The new basement will extend to a depth of c. 3.70m bgl and will be founded within the Claygate Beds.

4.7 Groundwater was not generally encountered during the investigation. One of the two boreholes was installed with a piezometer. The BIA reports a single monitoring visit occurred at WS01 where groundwater was found to be at 3.30m bgl which is above proposed basement level. The addendum indicates that an additional visit was undertaken in August 2023 and the water rose to 2.2m bgl.

4.8 The BIA and addendum states that a dewatering plan should be included within the construction method statement and considered in the final design and that the advice of a reputable dewatering company should be sought. The structural report recommends the use of sump pumping to deal with any groundwater ingress into the excavation. The addendum recommends that additional groundwater monitoring is undertaken before construction to inform the detailed temporary works design and dewatering strategy.

4.9 The geotechnical parameters to be adopted in retaining wall and settlement calculations are presented. The BIA indicates a friction angle, φ, of 24o for the Claygate Beds, which has been adopted in the structural calculations. Similarly, the value used for the allowable bearing capacity used in the structural calculations are in line with those presented in the BIA.

4.10 Structural information including a proposed construction sequence for the basement is presented in the BIA. The underpinning of the existing perimeter walls will take place in a 'hit and miss' sequence in bays not exceeding 1.2m width. The underpins will be 2.80m deep below the existing foundation depth, which is given as 103.50m OD. The BIA states that the new retaining walls will not be cantilevered at any stage during the construction process and adequate temporary propping, particularly at the top level, will occur at all times prior to the construction of the permanent concrete floor slabs.

4.11 A Ground Movement Assessment (GMA) and damage assessment have been revised in the addendum to assess whether ground movements and consequential damage to neighbouring properties will be within LBC's policy requirements. Nearby sensitive structures comprise the neighbouring Nos. 30, 32, 36 and 38 Hollycroft Avenue.

4.12 G round movements due to basement construction by underpinning and excavation have been determined. The GMA assumes 5mm vertical and horizontal movement occurs at the underpin, dissipating over 2 times the underpin depth for vertical movement and 4 times the underpin depth for horizontal movement. The results of the Building Impact Assessment currently indicate damage to all of the neighbouring buildings to be Burland Category 1 (Very Slight) or less, which is in line with LBC policy.

4.13 The BIA presents an outline ground movement monitoring strategy including equipment recommended, survey control, frequency, trigger levels and monitoring procedure. It states that the final monitoring points shall be agreed between the Party Wall surveyor and consulting engineer.

5.0 CONCLUSIONS

5.1 The qualifications of the individuals involved in the production of the BIA addendum are in accordance with LBC guidance.

5.2 Screening and scoping assessments are presented, supported by desk study information and reviewed by the relevant qualified professional.

5.3 A site investigation has been undertaken indicating the basement will be founded in the Claygate Beds.

5.4 An outline drainage strategy including SUDS assessment has been presented indicating surface water flooding risk will not increase in the area as part of the development. It is accepted that the proposed development will not impact the hydrology of the area.

5.5 Relevant local surface water and groundwater data have been reviewed and impact assessments updated. It is accepted that the development will not have a significant impact on the hydrogeology of the area.

5.6 Geotechnical parameters to inform design have been provided.

5.7 It is accepted that the development will not have a significant impact on the surrounding land stability.

5.8 A Ground Movement Assessment has been undertaken and the damage assessment predicts impacts to neighbouring building of Burland Category 1 (Very Slight), which is in line with LBC policy limits.

5.9 Groundwater monitoring is recommended to continue before and during construction to inform temporary works design.

5.10 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.

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Appendix 1

Residents' Consultation Comment

Residents' Consultation Comments

Surname	Address	Date	Issue Raised	Response
Redington Frognal Neighbourhood Forum	N/A	16/11/22	▪ Hydrogeology (spring lines and underground rivers) ▪ Structural stability of neighbouring properties	▪ Section 4

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Appendix 2

Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA format	Land stability and hydrology impact assessment should be reviewed by a suitably qualified professional.	Closed – See Section 4.1.	09/2023
2	Hydrology	Outline drainage strategy including SuDS assessment to be presented.	Closed – See Section 4.5.	09/2023
3	Hydrogeology	Review of local surface water and groundwater data should be reviewed and impact assessments updated, including relevant mitigation proposals, if required.	Closed – See Sections 4.4, 4.7, 4.8	09/2023
4	Land stability	The GMA requires revision and the monitoring proposal updated.	Closed – See Sections 4.11. – 4.13	09/2023
5	Hydrogeology	Ground water monitoring should be continued to inform temporary works design.	Note Only	

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Appendix 3

Supplementary Supporting Documents

None

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