

**71 Avenue Road, London,
NW8 6HP**

**Basement Impact Assessment
Audit**

For
London Borough of Camden

Project No.
13693-86

Date
November 2023

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CONTENTS

| | | |
|-----|---|----|
| 1.0 | Non-Technical Summary | 4 |
| 2.0 | Introduction | 5 |
| 3.0 | Basement Impact Assessment Audit Checklist..... | 8 |
| 4.0 | Discussion | 12 |
| 5.0 | Conclusions | 15 |

APPENDICES

| | | |
|------------|---|----|
| Appendix 1 | Consultation Responses..... | 16 |
| Appendix 2 | Audit Query Tracker..... | 17 |
| Appendix 3 | Supplementary Supporting Documents..... | 19 |

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 71 Avenue Road, London, NW8 6HP (planning reference 2022/2529/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 Basement Impact Assessment (BIA) has been carried out by Ground and Water and the individuals concerned in its production have qualifications in accordance with CPG Basements.
- 1.5 The proposal involves the complete demolition of the existing property to enable the construction of new dwelling with three storeys and a basement covering the entire building footprint.
- 1.6 Clarification of the proposed basement excavation depth has been provided and the proposed basement depth is now consistent in all the documents presented. The BIA confirmed the existing property is to be demolished and the proposed development will not share party walls with any neighbouring properties.
- 1.7 Screening exercises for Land Stability, Hydrogeology and Hydrology include relevant figures/maps from the ARUP GSD and other guidance documents to support responses to screening questions. The BIA concludes there is no impact to hydrogeology.
- 1.8 A ground investigation has been undertaken to confirm ground conditions, groundwater levels, existing foundations, and allow the derivation of geotechnical parameters for retaining wall design and for use in subsequent impact assessment.
- 1.9 A Flood Risk Assessment is submitted along with SuDS proposal to mitigate the increase in runoff by the provision of rainwater harvesting system and attenuation tank. No other impacts to surface water are identified.
- 1.10 The Structural Report has been provided along with clarification on the estimated depth of the piled retaining wall.
- 1.11 The Ground Movement Assessment has been amended to demonstrate predicted damage to neighbouring walls will be within the limits set by the CPG: Basements (not worse than Burland Category 1).
- 1.12 Considering the additional information presented, the BIA complies with the requirements of CPG: Basements.

2.0 INTRODUCTION

2.1 CampbellReith was instructed by London Borough of Camden (LBC) on 09/11/2022 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 71 Avenue Road, London, NW8 6HP and Planning Reference No - 2022/2529/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.
- Neighbourhood Plan if relevant – Not Applicable

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 a two storey, single family dwellinghouse (Class C3) with basement and accommodation in the roof space, following the demolition of existing"*.

2.6 The Audit Instruction confirmed 71 Avenue Road does not involve, nor is a neighbour to, listed buildings.

2.7 CampbellReith accessed LBC's Planning Portal on 22/11/22 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA) by Adkins Consultants Ltd dated 14th April 2022, Rev A
- Arboricultural Impact Assessment & Method Statement dated 1st June 2022, Ref-jwmb/rpt1/71avenuerd/AIAAMS
- Planning Application Drawings by Patrick Urbanski Architect dated 19th July 2019, Ref – P_19_245 consisting of:
 - Location Plan, Rev A;
 - Existing Plans, Rev I;
 - Proposed Plans, Rev J.
- Demolition Plan by Adkins Consultants Ltd. Dated 10th May 2022 Rev 00, Dwg No. - AR-MP-A1-C-01
- Site Visit Report by Adkins Consultants Ltd dated 4th January 2022, Rev A
- Flood Risk Assessment by GeoSmart Information, dated 29th March 2022, Ref No. - 75438R1
- Sustainable Drainage Assessment by GeoSmart Information, dated 14th April 2022, Ref No. - 75438R1
- Design & Access Statement by Patrick Urbanski Architect dated 18th April 2022, Rev A, Ref – P_19_245

2.8 CampbellReith issued the initial audit in December 2022, following which, the following additional information was received in July 2023:

- Basement Impact Assessment and Ground Investigation Report (BIA) by Ground and Water dated May 2023, ref.: GWPR5173/BIA&GIR/May2023
- Structural Report by Adkins Consultant Ltd dated 12th January 2023, Rev A
- Arboricultural Impact Assessment & Method Statement by Arbortrack Systems Ltd dated June 2023.

2.9 The third revision of the audit includes the following documents received between September and November 2023:

- Basement Impact Assessment and Ground Investigation Report (BIA) by Ground and Water dated November 2023, ref.: GWPR5173/BIA&GIR/November2023 including GMA software input and output;
- Structural Report by Adkins Consultants Ltd dated 18 August 2023, Rev B and structural drawings (AR-A1-ZS-04; AR-A1-ZS-05; AR-A1-ZS-06; AR-A1-ZS-07; AR-A1-ZS-08), Rev. 01 dated August 2023.

- Builder Documentation Comment Response Sheet by Adkins Consultants Ltd, dated August 2023, ref.:03RZS2303;
- Flood Risk Assessment by GeoSmart Information, dated October 2023, Ref No. - 75438R3;
- Sustainable Drainage Assessment by GeoSmart Information, dated October 2023, Ref No. - 75438R6.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECKLIST

| 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 | |
| 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 | |
| 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? | Yes | |
| 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 | In Site Inspection Report |
| Is the presence/absence of adjacent or nearby basements confirmed? | No | However, assumptions on this regard are considered conservative. |
| 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 | A flood risk assessment, SuDS system and Demolition Method Statement is provided. Ground investigation report, ground movement assessment and Structural Report are provided. |
| Are the baseline conditions described, based on the GSD? | Yes | |
| Do the base line conditions consider adjacent or nearby basements? | No | However, assumptions on this regard are considered conservative. |

| Item | Yes/No/NA | Comment |
|--|-----------|--|
| Is an Impact Assessment provided? | Yes | |
| Are estimates of ground movement and structural impact presented? | Yes | |
| 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 | FRA and SuDS proposed to mitigate surface water flood risk. Mitigation during construction presented in the BIA and Structural Report. |
| Has the need for monitoring during construction been considered? | Yes | |
| Have the residual (after mitigation) impacts been clearly identified? | Yes | Considered negligible. |
| 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 | Hydrogeological impacts confirmed to be absent. SuDs proposed to mitigate effects of increased surface water flows. |
| 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 | |

| Item | Yes/No/NA | Comment |
|---------------------------------------|-----------|---------|
| Are non-technical summaries provided? | No | |

4.0 DISCUSSION

- 4.1 The Basement Impact Assessment (BIA) was originally carried out by Adkins Consultants Ltd with input from GeoSmart Information Ltd. A new BIA has been recently presented and is authored by Ground and Water. The individuals concerned in its production hold appropriate qualifications in accordance with CPG Basements and their signatures are presented to confirm their involvement.
- 4.2 The LBC Instruction to proceed with the audit identified that the basement proposal does not involve, nor is a neighbour to, listed buildings. The existing property is a two-storey house, with gardens present to the south-west and north-east. The BIA indicates the existing property shares a party wall with No. 69 Avenue Road. However, the building will be demolished as part of the proposed development and the new basement and superstructure will be constructed wholly within the applicant's boundary. The site is bounded by Queen's Grove and Avenue Road to the north-west and north-east respectively, to the south-east No. 69 Avenue Road is present, while No. 37a Queen's Grove is located to the south-west.
- 4.3 The proposal involves the complete demolition of the existing property to enable the construction of new dwelling with three storeys and a basement covering the entire building footprint. Clarification has been provided on the depth of the basement: the structural report indicates the basement top of concrete (TOC) will be at 4.20m bgl and that there will be a localised deeper basement area where a pool is proposed with the TOC at 5.70m bgl. Both the BIA and GMA are now consistent on this regard.
- 4.4 Desk Study information has been presented clearly with relevant figures/maps from the ARUP GSD and other guidance documents to support responses to screening questions.
- 4.5 The screening exercise has identified the presence of the lost River Tyburn to flow within proximity of the site. This has been carried through to scoping in the updated BIA and the potential impact assessed. The BIA states that no evidence of the presence of the culverted river and associated deposits was found during the site investigation and it is reasonable assuming the River Tyburn does not impact the proposals.
- 4.6 The Land Stability screening has been revised, and 'Yes' answers brought forward into scoping to consider potential impacts and further assessments needed to mitigate these impacts. An Arboricultural Survey is presented which confirms no trees are going to be removed as part of the development.
- 4.7 The Impact Assessment has been revised and the following information has been presented to inform the assessment:
- Ground Investigation Report,
 - Ground Movement Assessment,
 - Outline Structural Method Statement.

- 4.8 A ground investigation was carried by Ground and Water in January 2023 comprising four boreholes to a maximum depth of 9.00m bgl. The ground conditions encountered comprise Made Ground to a maximum depth of 1.80m bgl and London Clay Formation to depth. It is accepted the basement will be founded within the London Clay. No groundwater was encountered during drilling, but it was monitored between 1.60 and 4.40m bgl during two following visits.
- 4.9 The site investigation findings confirm that the site is not underlain by an aquifer. In addition, the absence of the lost River Tyburn has been confirmed through the site investigation and, as a such, it is accepted there will not be any adverse impact on the hydrogeological environment.
- 4.10 The original BIA identified a high risk of surface water flooding at the site. There will be an increase in hardstanding areas as part of the proposals. The impacts due to surface water flooding and increase in impermeable surface area will be mitigated through the provision of a SuDS system comprising rainwater harvesting along with an attenuation tank with control flow valves. The assessment made in GeoSmart Information report considers a 1 in 100 year flood event and accounts for 40% climate change.
- 4.11 A Structural Report is presented which indicates the basement excavation will be facilitated by the installation of a contiguous piled retaining wall. The reinforced concrete basement slab will act as a raft foundation and, together with the piled retaining wall, will take the loads of the proposed structure. The report mentions the need of bracing/props to support the retaining wall during the excavation, and states that temporary design will be responsibility of the temporary works contractor. A depth of 10m has been assumed for the embedded piled retaining wall at this stage. Waterproofing and groundwater ingress mitigation measures are presented.
- 4.12 Geotechnical parameters to be adopted in the design, including retaining wall design have been presented and generally accepted.
- 4.13 A Ground Movement Assessment (GMA) is presented in the BIA to demonstrate damage to neighbouring properties and infrastructure is limited to Category 1 of the Burland Scale. The approach reported in CIRIA C760 has been adopted and the software XDisp used to undertake the analysis.
- 4.14 Clarification on the following items has been presented:
- Outline calculations have been presented in the structural report and indicate a 10m deep embedded piled retaining wall will be able to support the proposed structural loads.
 - The BIA has confirmed the proposed development will not share party walls with any neighbouring property. All the walls within the zone of influence of the basement have been analysed and expected category of damage provided in the GMA. A plan showing the geometry of neighbouring walls in relation to the basement is also presented.
 - Full tabular input and output of the XDisp software has been presented.

- 4.15 The GMA indicates that neighbouring structures may experience damage up to Category 1 of the Burland Scale, which is line with CPG for basements requirements. An outline movement monitoring strategy has been presented indicating monitoring locations and trigger values to make sure any damage to neighbouring properties will be within those anticipated.

5.0 CONCLUSIONS

- 5.1 The Basement Impact Assessment (BIA) has been carried out by Ground and Water and the individuals concerned in its production have qualifications in accordance with CPG Basements.
- 5.2 Clarification on the proposed basement excavation depth has been presented in the updated BIA, architectural drawings and structural report. The BIA also confirmed that the proposed building will not share party walls with any of the neighbouring buildings.
- 5.3 Screening exercises for Land Stability, Hydrogeology and Hydrology include relevant figures/maps from the ARUP GSD and other guidance documents to support responses to screening questions. The hydrogeology impact assessment has been revised and confirms no adverse impact on the local or wider hydrogeological environment.
- 5.4 A ground investigation has been undertaken to confirm ground conditions, groundwater levels, existing foundations, and allow the derivation of geotechnical parameters for design. It is accepted the basement will be founded within the London Clay.
- 5.5 A Flood Risk Assessment is submitted along with SuDS proposal to mitigate the increase in runoff by the provision of rainwater harvesting system and attenuation tank. No other impacts to surface water are identified.
- 5.6 The Structural Report has been updated to include clarification on the estimated depth of the piled retaining wall.
- 5.7 Similarly, the Ground Movement Assessment has been amended in response to previous comments and to present additional information. The GMA confirms predicted damages to neighbouring buildings to be within the limits set in the CPG for basements.
- 5.8 Considering the additional information provided it can be confirmed that the BIA complies with the requirements of CPG: Basements.

Appendix 1

Consultation Responses

None

71 Avenue Road, London, NW8 6HP
Basement Impact Assessment Audit

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Appendix 2

Audit Query Tracker

| Query No | Subject | Query | Status | Date closed out |
|----------|----------------|--|-------------------------------|-----------------|
| 1 | BIA | Contribution to BIA by all listed parties to be confirmed. | Closed – Section 4.1 | November 2023 |
| 2 | BIA | Clarification on whether the applicant’s property shares a party wall with 69 Avenue Road is required. | Closed - Section 4.2. | |
| 3 | BIA format | Clarification on the excavation depth is required. Architectural drawings, BIA and Structural Report should be in agreement. | Closed – Section 4.3. | |
| 4 | Hydrogeology | Hydrogeological impact assessment to be completed to include the presence of a 'lost river' potentially running close to the proposed development. | Closed – Section 4.5. | |
| 5 | Land stability | Clarification on the assumed depth of the embedded piled retaining wall is required. | Closed | |
| 6 | Land stability | The GMA should be revised as discussed in Section 4 and the input/output of the software is required. The GMA should demonstrate that damage is quantified to be no more than Category 1 of the Burland Scale. | Closed – Section 4.14 – 4.15. | |

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Appendix 3

Supplementary Supporting Documents

None

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