

3 Hampstead Hill Gardens,
London NW3 2PH

Basement Impact Assessment
Audit

For
London Borough of Camden

Project Number: 13398-99

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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 3 Hampstead Hill Gardens, London NW3 2PH (planning references 2021/1335/P and 2021/2249/L). 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 BIA has been prepared by RPS Group with supporting documents prepared by Evolve Consulting Structural & Civil Engineers. The authors' qualifications are in accordance with LBC guidance.
- 1.5. It is proposed to demolish an existing outbuilding and to construct a new two-storey building with a single storey basement gym, dance studio and yoga room, to a maximum depth of 4.00m below ground level.
- 1.6. The revised BIA includes the information required from a desk study in line with LBC guidance.
- 1.7. The revised BIA includes an updated Screening assessment.
- 1.8. A site investigation indicates ground conditions of Made Ground overlying the London Clay Formation.
- 1.9. No groundwater was encountered during drilling but was encountered during monitoring. Shallow, perched groundwater was observed during monitoring.
- 1.10. Geotechnical interpretative information is provided.
- 1.11. The BIA includes temporary works information including sequencing, and structural calculations including retaining wall design. The revised BIA confirms that 'silent' sheet piling methodologies will be employed.
- 1.12. A Ground Movement Assessment (GMA) has been undertaken and damage impacts to neighbouring properties are predicted to be within LBC's policy requirements.

- 1.13. An outline methodology and guidance for monitoring structural movements during construction has been provided including proposed trigger values and contingency actions.
- 1.14. The BIA indicates the site is not within a Critical Drainage Area but there will be an increase in impermeable site area as a result of the basement development. No attenuation is proposed, with proposed drainage to discharge directly to sewers, and the increase in off-site flow rates assessed as negligible. Drainage proposals should be agreed with LBC and Thames Water.
- 1.15. The site is not located within a Local Flood Risk Zone. The revised BIA includes flood risk mapping clarifies the site is at very low risk from flooding.
- 1.16. An outline programme of works has been presented.
- 1.17. Queries and matters requiring further clarification are discussed in Section 4 and summarised in Appendix 2. Considering the revisions provided, the BIA meets the requirements of CPG: Basements.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 20th May 2021 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 3 Hampstead Hill Gardens, London NW3 2PH, Camden Reference 2021/1335/P and 2021/2249/L.
- 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): Basements. January 2021
 - Camden Development Policy (DP) 27: Basements and Lightwells.
 - Camden Development Policy (DP) 23: Water.
 - The 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; and,
 - 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 planning portal describes the proposal as: "*Erection of replacement single storey outbuilding in rear garden including excavation of basement beneath.*"

The planning portal also confirmed the site lies within Hampstead Conservation Area and the main house is Grade II listed.

2.6. CampbellReith accessed LBC's Planning Portal on 27th May 2021 and gained access to the following relevant documents for audit purposes:

- Letter Report (ref JER8872) dated 16th March 2021 by RPS Group.
- Basement Impact Assessment (ref JER 8872) dated January 2021 by RPS Group.
- Construction Method Statement (Rev A) dated 26th February 2021 by Evolve Consulting Structural & Civil Engineers.
- Construction Method Statement (Rev B) dated 19th May 2021 by Evolve Consulting Structural & Civil Engineers.
- Existing and proposed plans dated March 2021 by UVA design Ltd.
- Design & Access Statement (rev 01) dated 19th March 2021 by UVA design Ltd.
- Heritage Statement by UVA design Ltd.
- Arboricultural Impact Assessment (ref HWA10545_APIII) dated 8th March 2021 by Hallwood Associates.

2.7. CampbellReith were provided with the following relevant documents for audit purposes in November and December 2021:

- Basement Impact Assessment (ref JER 8872 V1.0 Rev 3) dated July 2021 (issued 15th December 2021) by RPS Group.
- Construction Method Statement (Rev C 1st Issue) dated 23rd November 2021 by Evolve Consulting Structural & Civil Engineers.

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	Utility plans provided. Details on sheet piling proposed 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 plans/maps included?	Yes	Maps and plans to describe the environmental setting are provided in the BIA. Flood risk mapping provided.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	Flood risk mapping provided.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 3.3 of the BIA. Clarification of potential shrink swell impacts provided.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 3.2 of the BIA.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 3.4 of the BIA. Risk of surface water flood risk clarified with mapping data provided.
Is a conceptual model presented?	Yes	

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.2 of the BIA.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.1 of the BIA.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.3 of the BIA.
Is factual ground investigation data provided?	Yes	Section 5 of the BIA. Ground investigation undertaken in November 2020 by RPS Group. No information on borehole location provided.
Is monitoring data presented?	No	Section 5.1.13 of the BIA states that groundwater was not encountered during drilling of the borehole on site but was encountered during monitoring at 1.35m bgl on 9 th December 2020.
Is the ground investigation informed by a desk study?	Yes	Sections 2 and Appendix B of the BIA.
Has a site walkover been undertaken?	Yes	In conjunction with the site investigation.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Section 2.9.4 lists the neighbouring properties that are understood to have either a basement or a lower ground floor. Section 9.2 provides additional information on 5 Hampstead Hill Gardens (understood to have a lower ground floor level) and 1 Hampstead Hill Gardens (understood to have a single storey basement). In addition, it is understood that the 2 buildings directly next to the site are associated with 56 Rosslyn Hill (the former police station) and do not have basements.
Is a geotechnical interpretation presented?	Yes	Section 6 of the BIA.

Item	Yes/No/NA	Comment
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 6.5 of the BIA and section 3.1 of the Construction Method Statement.
Are reports on other investigations required by screening and scoping presented?	Yes	Arboricultural Impact Assessment: 7 trees recommended for felling or relocation (in contradiction to the one tree being felled within the BIA report). Drainage Scheme report.
Are baseline conditions described, based on the GSD?	Yes	
Do the baseline conditions consider adjacent or nearby basements?	Yes	Conservative assumptions made where depth of foundations unknown.
Is an Impact Assessment provided?	Yes	Section 7, 9 and 10 of the BIA.
Are estimates of ground movement and structural impact presented?	Yes	Section 7 of the BIA.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	
Has the need for monitoring during construction been considered?	Yes	Section 3.3 of the Construction Method Statement.
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	Final proposed drainage design will require approval from LBC and Thames Water.

Item	Yes/No/NA	Comment
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	Section 8 of the BIA.
Are non-technical summaries provided?	Yes	Section 12 of the BIA.

4.0 DISCUSSION

- 4.1. The BIA has been prepared by RPS Group with supporting documents prepared by Evolve Consulting Structural & Civil Engineers. The authors' qualifications are in accordance with the requirements of CPG: Basements.
- 4.2. The site currently comprises a two to three-storey Grade II listed detached property with a separate single storey building at the rear of the garden in the northwest of the site. It is proposed to demolish the existing outbuilding and to construct a new two-storey building with a single storey basement gym, dance studio and yoga room. It is understood that the proposed formation level of the basement will have a maximum depth of 4.00m below ground level (bgl). The proposed building is adjacent to buildings associated with a former police station at 56 Rosslyn Hill (to the northwest) and the garden of 24 Rosslyn Hill (to the southwest). Both boundaries are served with masonry garden walls thought to be on shallow foundations.
- 4.3. The BIA includes the majority of the information required from a desk study in line with the GSD Appendix G1. The Northern Line tunnel is located 40m southwest of the site. A London Overground tunnel is located 80m south of the site. Utilities plans and flood risk mapping should be provided.
- 4.4. A preliminary assessment for potential Unexploded Ordnance on the site was reportedly undertaken by RPS in November 2020. This report should be provided to the Engineer and Contractor for their review prior to construction.
- 4.5. A Screening Assessment has been completed. The revised BIA addresses queries from the D1 audit, with responses taken to Scoping and addressed in the CMS.
- 4.6. A site investigation was undertaken in November 2020 by RPS Group comprising one borehole to a maximum depth of 10.00m bgl. The ground conditions comprise Made Ground (from ground level to 0.90m bgl) overlying the London Clay Formation (to the full depth of the borehole). A plan showing the borehole location has not been provided.
- 4.7. Groundwater was not encountered during drilling but was encountered during monitoring at 1.35m bgl on 9th December 2020. The BIA states that the groundwater levels are considered to be perched water and that any water ingress into the excavation should not be excessive and likely to be controllable via localised sump pumping.
- 4.8. Interpretative geotechnical information is presented, broadly in accordance with the GSD Appendix G3.
- 4.9. The Construction Method Statement Revision C and revised BIA indicate that following the demolition of the existing building excavation will be commenced in sequence for underpinning of the existing garden wall with temporary propping in place on all sides of the excavation. 'Silent'

Sheet piling will be utilised in the temporary case and the final basement construction will form a 'concrete box' consisting of the reinforced concrete basement floor slab, walls and ground floor above. The retaining walls are designed as propped cantilevers. The use of dewatering may be required. It is understood that the 'Silent' sheet piling would comprise the sheets being hydraulically placed to minimise potential vibration.

- 4.10. A Ground Movement Assessment (GMA) has been undertaken. The results presented in the BIA were calculated based on an original design involving contiguous, bored piled walls, which has since been superseded as 4.9. Section 8.5 of the revised BIA provides further commentary on the applicability of the GMA methodology for underpinning and sheet piled walls. The GMA indicates that structural damage to the adjacent buildings associated with 56 Rosslyn Hill (the former police station) will not exceed Burland Category 1 (Very Slight) as required by CPG: Basements, and that other properties are on the periphery of the zone of influence of the works and will not be impacted.
- 4.11. An outline methodology and guidance for monitoring structural movements during construction has been provided including proposed trigger values and contingency actions.
- 4.12. Whilst Hampstead Heath Gardens is not located within a Critical Drainage Area, the rear garden of 3 Hampstead Hill Gardens is adjacent to Critical Drainage Area (Group 3-010). The BIA indicates there will be an increase of 6.50m² in impermeable site area as a result of the basement development. The Drainage Strategy provided states that all surface water will be discharge to the existing below ground surface water sewer. No attenuation is proposed and the increase in off-site flow rates is assessed as negligible. Drainage proposals should be agreed with LBC and Thames Water.
- 4.13. The site is not located within a Local Flood Risk Zone. The BIA states that the site is at very low risk of surface water flooding, which is clarified in the revised BIA with appropriate mapping presented. Hampstead Heath Gardens did not flood in 1975 or 2002. A below ground sump pump will be installed within the basement gym to mitigate flood risk.
- 4.14. An outline programme of works has been presented.

5.0 CONCLUSIONS

- 5.1. The authors' qualifications are in accordance with the requirements of CPG Guidelines.
- 5.2. Utilities plans and flood risk mapping have been provided in the revised BIA.
- 5.3. A Screening assessment has been completed.
- 5.4. A site investigation indicates ground conditions of Made Ground overlying the London Clay Formation. Shallow, perched groundwater was observed during monitoring.
- 5.5. Geotechnical interpretative information is provided.
- 5.6. Temporary works information is provided.
- 5.7. A Ground Movement Assessment (GMA) has been undertaken and predicted impacts to neighbouring structures are within the required policy limits.
- 5.8. An outline methodology and guidance for monitoring structural movements has been provided.
- 5.9. The BIA indicates there will be an increase in impermeable site area. Drainage proposals should be agreed with LBC and Thames Water.
- 5.10. The site is not located within a Local Flood Risk Zone and the site is at very low risk of flooding.
- 5.11. An outline programme of works has been presented.
- 5.12. Queries and matters requiring further clarification are summarised in Appendix 2. Considering the revisions provided, the BIA meets the requirements of CPG: Basements.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status/Response	Date closed out
1	Desk Study	Underground utility infrastructure and flood risk mapping information should be provided.	Open – 4.3	December 2021
2	Stability / Hydrology	A Screening assessment has been completed. However, several Screening responses require further clarification.	Open – 4.5	November 2021
3	Stability	Further clarification is sought on the type and methodology of the proposed sheet piling.	Open – 4.9	Decemberr 2021
4	Stability	A Ground Movement Assessment (GMA) has been undertaken and damage impacts to neighbouring properties are predicted to be within LBC's policy requirements. However, clarification of the assessment is required, as Section 4.	Open – 4.10	November 2021
5	Stability	An outline methodology and guidance for monitoring structural movements during construction has been provided including proposed trigger values and contingency actions. This is accepted, pending the revisions requested to the GMA.	Open – 4.11	November 2021
6	Hydrology	Flood risk mapping to be provided and risk of surface water flooding to be clarified.	Open – 4.3, 4.4, 4.13	December 2021

Appendix 3: Supplementary Supporting Documents

None

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