

5 The Grove - Swimming Pool,
London, N6 6JU

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 a swimming pool at 5 The Grove, London, N6 6JU (planning reference 2021/4146/P & 2021/4990/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 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 carried out by individuals who possess suitable qualifications as per CPG: Basements 2021.
- 1.5. Desk study information and a screening assessment are presented.
- 1.6. It is proposed to discharge additional surface water run-off to the ground, as it currently does. Therefore it is accepted that the development will not impact the hydrology of the area.
- 1.7. A site investigation confirms that the proposed swimming pool would be built within the Bagshot Formation, classified as a Secondary A Aquifer. Groundwater was encountered at 6.00m below ground level. Further groundwater monitoring is recommended to confirm design and temporary works parameters. However, there should be no impact to the hydrogeological environment.
- 1.8. The swimming pool will be built with reinforced concrete slabs, liner walls and micro piles will be utilised as part of the permanent works.
- 1.9. No ground movement assessment (GMA) has been undertaken. Assessment of the impact the proposed development will have on the nearby listed garden wall is required.
- 1.10. It is accepted that the development will not have a significant impact on the slope stability of the area.
- 1.11. Until the queries raised in Appendix 2 are addressed, it cannot be confirmed that the BIA complies with the requirements of CPG.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 13th April 2022 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 5 The Grove, London N6 6JU and Planning References 2021/4146/P & 2021/4990/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

- 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.
- Highgate Neighbourhood

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 *"Extension to existing outbuilding, including outdoor shower and roof terrace above; relocation of swimming pool; erection of pergola; associated landscaping."*

The Audit Instruction confirmed 5 the Grove involved, and is a neighbour to, listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal on 03/05/2022 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA) by GEA Ltd, Revision 1, dated 26 August 2021 (ref: J21179A).
- Structural Engineering Report (SER) by Constructure Ltd, Revision P2, dated 16 September 2021.
- Architects General Arrangement Plans & Sections existing by 31/44 Architects, dated August 2021.
 - Existing Plans. (Ref No. 44/2022/PL 0001)
 - Demolition Plans. (Ref No. 44/2022/PL 1002)
 - Proposed Plans. (Ref No. 44/2022/PL 2001)
- Rear Garden Section and Surveys by Tom Stuart-Smith Ltd, dated August 2021 (Ref No. 381-L-S-201 & 381-L-P-102)
- Rear Garden - Landscape Design Statement by Tom Stuart-Smith, Revision P01, dated August 2021, (ref: 381-L-X-901).

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Section 1.3.2 of BIA
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	Section 3.1.2 of BIA.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 3.1.1 of BIA
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 3.1.3 of BIA.
Is a conceptual model presented?	Yes	Section 7.1 of BIA.
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	Section 4.1 of BIA and discussed further in Section 9.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.1 of BIA and discussed further in Section 9.
Is factual ground investigation data provided?	Yes	Section 7.0 of BIA.
Is monitoring data presented?	No	Groundwater monitoring is recommended in BIA.
Is the ground investigation informed by a desk study?	Yes	Section 2.0 of BIA.
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	No	However, no structures within 10m of proposed development.
Is a geotechnical interpretation presented?	Yes	Section 8.0 of BIA.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 8.1.2 of BIA.
Are reports on other investigations required by screening and scoping presented?	No	
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	Section 10.0 of BIA.
Are estimates of ground movement and structural impact presented?	No	The impact to the listed garden wall should be considered.

Item	Yes/No/NA	Comment
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	
Has the need for monitoring during construction been considered?	Yes	Continued monitoring recommended in Section 8.1.1 of the BIA.
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?	No	Impact to listed garden wall requires assessment
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	Confirmation of groundwater monitoring undertaken to date, or additional monitoring required.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	No	No GMA provided.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out by individuals who possess suitable qualifications as per CPG: Basements 2021.
- 4.2. The Structural Engineering Report (SER) has been carried out by Constructure Ltd.
- 4.3. The LBC Instruction to proceed with the audit identified that the main house at No. 5 The Grove is listed, as is the garden wall adjacent to the existing outbuilding. The Design & Access Statement identified that 5 The Grove is located in the Highgate Conservation Area.
- 4.4. The proposed works consist of excavating a new swimming pool in the existing rear garden, with a surrounding pool terrace, a woodland walk in the west and alterations to the existing single storey pool house in the east. The swimming pool is indicated to extend to a depth of approximately 3m below ground level.
- 4.5. Desk study information and a screening assessment are presented.
- 4.6. A site investigation confirms that the ground conditions comprise of Made Ground to c.2.00m below ground level (bgl), underlain by 14.20m of Bagshot Formation and followed by the Claygate Member to depth. It is confirmed the swimming pool will be founded within the Bagshot formation.
- 4.7. Groundwater was encountered during the investigation within the Bagshot Formation at depths of 6.00m bgl at the rear of the site and 12.00m bgl at the front garden. No subsequent groundwater monitoring has been carried out, and the BIA recommends that ongoing groundwater monitoring should be undertaken to establish equilibrium groundwater levels and seasonal fluctuations.
- 4.8. The screening assessment for hydrogeology identifies the Bagshot Formation as a Secondary A Aquifer. Given the depth of groundwater encountered during the investigation, and the referenced depth of groundwater from nearby investigations, the BIA suggests that the swimming pool is unlikely to impact the hydrogeological environment, as groundwater will follow a flow pathway around and below the pool. However, the BIA recommends a trial excavation of the full swimming pool excavation depth, as well as groundwater monitoring, to be carried out to confirm the depth of groundwater and inform the temporary works design, which should be implemented.
- 4.9. The screening assessment for hydrology identifies there will be an increase in hardstanding. This is taken forward to scoping where it is indicated that the additional surface water run-off generated will be attenuated by allowing the full volume of surface water to enter the ground. Surface water currently discharges to the ground, therefore no material change is envisaged.

- 4.10. The SER includes proposed construction methodology and the sequence of construction. The proposed swimming pool will be constructed in an open excavation with the sides battered back. It should be noted that the Bagshot Formation is a Secondary A Aquifer. Layers of sand with interbedded clays can give rise to groundwater levels and changes in pore water pressures, which can lead to instability. This should be considered in the temporary works design by a qualified temporary works engineer.
- 4.11. The permanent works for the swimming pool will include a reinforced concrete slab, liner walls and tension piles to limit heave and hydrostatic pressures at the base of the pool.
- 4.12. A Ground Movement Assessment is not provided in the BIA. The impact of the proposed swimming pool excavation on the adjacent listed garden wall should be assessed and predictions of ground movements given, along with mitigation measures if unacceptable levels of damage to the wall are expected.

5.0 CONCLUSIONS

- 5.1. The BIA has been carried out by individuals who possess suitable qualifications.
- 5.2. The proposal includes the construction of a new swimming pool and alterations to the pool house, with associated landscaping.
- 5.3. A Desk Study is provided.
- 5.4. The swimming pool will extend to a depth of 3.00m bgl and be founded within the Bagshot Formation.
- 5.5. Groundwater monitoring has not been undertaken and is recommended in the BIA, in order to confirm design parameters, construction techniques and temporary works requirements. The BIA suggests a trial excavation be carried out to the proposed maximum excavation depth, and that additional groundwater monitoring is undertaken.
- 5.6. The above notwithstanding, it is accepted that the swimming pool excavation will not impact the hydrogeology of the area, as flow paths around and below the excavation will remain available.
- 5.7. It is accepted that the development will not impact the slope stability of the surrounding area.
- 5.8. The development will increase the amount of hardstanding at the site. It is proposed that surface water run-off be attenuated and discharge to the ground, as it does at present. It is therefore accepted that the hydrology of the area will not be significantly impacted.
- 5.9. It is proposed to construct the pool in open cut. Detailed temporary works design will need to consider the excavation instability within the Bagshot Formation.
- 5.10. Reinforced concrete slabs, liner walls and micro piles will be utilised as part of the permanent works.
- 5.11. No ground movement assessment (GMA) has been undertaken. The impact of the proposed pool excavation on the nearby listed garden wall should be assessed and mitigation measures provided to control any unacceptable damage.
- 5.12. Until the queries summarised in Appendix 2 are addressed it cannot be confirmed that the BIA complies with the requirements of CPG Basements.

Appendix 1: Consultation Responses

Residents' Consultation Comments

Issues relevant to the the GMA are addressed below.

Surname	Address	Date	Issue raised	Response

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Land Stability	Consideration of the impact to the nearby listed garden wall is required.	Open	

Appendix 3: Supplementary Supporting Documents

J21179 - 5 The Grove GI & BIA Rep Rev 2

2124_The Grove - CMS Report for Basement - Rev. P2

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