

12B Keats Grove
London, NW3 2RN

Basement Impact Assessment
Audit

For
London Borough of Camden

Project Number: 13693-80
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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 12B Keats Grove (planning reference 2022/1607/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 proposed development comprises the demolition of the existing house and the construction of a part two-storey, part three-storey house with a single level basement across the entire site footprint.
- 1.5. The qualifications of the individuals involved in the production of the BIA meet the requirements of CPG Basements.
- 1.6. Screening and scoping assessments are presented, supported by desk study information.
- 1.7. The proposed excavation will be founded within the firm Head Deposits or the firm to stiff London Clay.
- 1.8. Geotechnical parameters are provided and accepted.
- 1.9. All external hardstanding and hard landscaping areas are formed in permeable paving.
- 1.10. The BIA states that groundwater may be encountered during the basement excavation and indicates the potential need for localised dewatering from sumps.
- 1.11. Utility data is now provided and indicates that no underground infrastructure (utilities) within the zone of influence of the proposed works
- 1.12. The BIA confirms that the neighbouring properties will not be impacted by the tree removal.
- 1.13. The Ground Movement Assessment (GMA) has been provided. The results of the Building Impact Assessment considering the proposal at the current stage indicate damage to neighbouring buildings will not exceed Category 1 (Very Slight). However, the stability of the sloping lightwell should be insured at all times and their design should be undertaken by a

specialist contractor. If the proposal is going to change then the GMA should be updated accordingly.

- 1.14. Based on the revised submissions it can be confirmed that 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 16th of September 2022 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 12B Keats Grove, London, NW3 2RN, planning reference 2022/1607/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.
- 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 *"Demolish the existing house at 12B Keats Grove and redevelop the site with a new 4-bedroom home to form part of a shared estate with 12 Keats Grove by creating a unified, biodiverse woodland landscape to connect the garden of 12B with the already consented landscape at 12 Keats Grove."*
- 2.6. CampbellReith accessed LBC's Planning Portal on the 30th of September 2022 and gained access to the following relevant documents for audit purposes:
- Ground Investigation and Basement Impact Assessment by Geotechnical and Environmental Associates (GEA), ref.: J21350 Rev 1, dated April 2022.
 - Structural Engineer's Basement Impact Assessment by Price & Myers, ref.: 28412 Rev 2., dated April 2022.
 - Structural Strategy Report by Price & Myers, ref.: 28412, dated 30 March 2022.

- Arboricultural Impact Assessment by R.Howorth & Co Ltd, dated 4 April 2022.
- Proposed and Existing Architectural Drawings by 51 Architecture:
 - Proposed location plan, dated January 2022;
 - Dismantling & Repurposing Plan, dated August 2021;
 - Proposed Plan Lower Ground Floor, dated August 2021;
 - Proposed Plan Upper Ground Floor, dated September 2021;
 - Proposed 1st and 2nd Floor Plan, dated October 2022;
 - Proposed Roof Plan, dated October 2022;
 - Proposed South Elevation Street Context, dated October 2022;
 - Proposed South Elevation Garden Context, dated August 2021;
 - Proposed North Elevation Garden Context, dated August 2021;
 - Proposed West Elevation, dated September 2021;
 - Proposed Section aa, dated September 2021;
 - Proposed Section bb, dated August 2021;
 - Proposed Section cc and Proposed Section dd, dated October 2022;
 - Proposed Section ee, dated August 2021;
 - Proposed Section ff, dated October 2021;
 - Proposed Section gg, dated September 2021;
 - Existing Ground Floor Plan, dated January 2022;
 - Existing First Floor Plan, dated January 2022;
 - Existing East Elevation, dated August 2021;
 - Existing West Elevation, dated August 2021;
 - Existing South Elevation street, dated August 2021;
 - Existing North Elevation, dated August 2021;
 - Existing Section aa, dated August 2021;
- Planning Consultation Responses as detailed in Appendix 1.

2.7. Subsequent to the initial audit report, CampbellReith gained access to the following relevant documents:

- Structural Engineer's Basement Impact Assessment by Price & Myers, ref.: 28412 Rev 2., dated October 2022.

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 the BIA
Is data required by Cl.233 of the GSD presented?	Yes	Utility Data have been presented in the revised BIA submission.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology, and hydrology?	Yes	Section 2 of the BIA.
Are suitable plan/maps included?	Yes	All maps to support screening are included in the BIA.
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 the BIA.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 3.1.1 of the BIA.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 3.1.3 of the BIA. External hardstanding and hard landscaping areas will be formed in permeable paving.
Is a conceptual model presented?	Yes	Section 7.0 of the BIA.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.1 of the BIA.

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	NA	No items were carried over to scoping.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	NA	No items were carried over to scoping.
Is factual ground investigation data provided?	Yes	Appendix Part 1 of the BIA.
Is monitoring data presented?	Yes	Section 5.4 of the BIA. Only one monitoring visit has been undertaken to date.
Is the ground investigation informed by a desk study?	Yes	Section 2 of the BIA.
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Section 2.1.1 of the BIA. At the time of the BIA production, No. 12 Keats Grove was undergoing refurbishment including lowering and extending the existing lower ground floor level. It is not known whether No 14 Keats Grove has a basement.
Is a geotechnical interpretation presented?	Yes	Section 8.1.2, 8.1.3, 8.2 and 11.2.1 of the BIA. Values for the undrained shear strength of the soils are now presented in the revised BIA submission.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 8.1.2 of the BIA. The wall on the eastern side of the slab is likely to be constructed in short lengths in an underpin sequence, similar to the western side.
Are reports on other investigations required by screening and scoping presented?	Yes	GMA, Arboricultural Impact Assessment, and Structural Engineer's Basement Impact Assessment are provided.
Are the baseline conditions described, based on the GSD?	Yes	

Item	Yes/No/NA	Comment
Do the base line conditions consider adjacent or nearby basements?	Yes	Section 2.1.1 of the BIA.
Is an Impact Assessment provided?	Yes	Section 14 of the BIA.
Are estimates of ground movement and structural impact presented?	Yes	Section 9 of the BIA.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	Section 14 of the BIA.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Section 14 of the BIA.
Has the need for monitoring during construction been considered?	Yes	Section 12.2 of the BIA. Monitoring frequencies and trigger alert levels will be established at a later stage of design.
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	Sections 11 & 12 of the BIA.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Sections 2.5 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	Section 12 of the BIA.
Are non-technical summaries provided	Yes	Executive Summary of the BIA.

4.0 DISCUSSION

- 4.1. The BIA has been carried out by Geotechnical and Environmental Associates (GEA). The qualifications of the individuals involved in the production of the BIA meet the requirements of CPG Basements.
- 4.2. The LBC instruction to proceed with the audit identifies that the development proposal is adjacent to No. 12 Keats Grove (under the same ownership) and is Grade II listed. Several listed buildings are located on Keats Grove Road, including the Grade II listed Russel House, 17 and 18 Keats Grove, Surrey Lodge and 19-22 attached garden walls and railings.
- 4.3. The site fronts onto Keats Grove to the south and is bounded by similar residential properties to the north, east and west and gently slopes down to the southeast. The site is irregular in shape, measuring approximately 55m by 15m in maximum extent. It is occupied by 12B Keats Grove, a part single-storey, part two-storey house. The house is roughly in the centre of the site, with a large garden to the rear (north) and a block paved driveway at the front of the house.
- 4.4. The proposed development comprises the demolition of the existing house and the construction of a part two storey, part three-storey house with a single level basement across the entire site footprint. Formation level of the proposed basement is at 62.37m OD (3.43m below ground level (bgl)), a small plant room in the southwestern corner will extend to a level of 61.98m OD (3.82m bgl), and a lift pit will extend to a level of 62.31m OD (3.49m bgl). The proposals include sloped lightwells to the front and rear, a paved driveway and private garden.
- 4.5. 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 to support responses to screening questions. According to the utility plans presented within the revised BIA submission, no underground infrastructure (utilities) have been identified within the zone of influence of the proposed works.
- 4.6. The site is not indicated as being at risk from flooding and is not within a critical drainage area. Existing and proposed plans show that the basement extends towards the garden at the rear, however, the external hardstanding and hard landscaping areas will be formed in permeable paving, therefore an increase in impermeable surfaces is not anticipated.
- 4.7. A ground investigation was undertaken by GEA. Site works comprised three boreholes to a depth of 5.45m bgl using an open-drive sampling rig. Made Ground was encountered to depths of 0.60m to 1.20m bgl. Head Deposits were encountered to depths of 3.0m to 4.0m bgl and the London Clay was proven to full depth of the investigation (5.45m bgl). The proposed excavation will be founded within the firm Head Deposits or the firm to stiff London Clay.

- 4.8. The BIA states that groundwater is encountered as seepage from the silty or sandy pockets within the Head Deposits and London Clay, it is not representative of a continuous groundwater table. However, it has been suggested that monitoring of the standpipes should be continued to confirm the assumptions. In addition, typical provision of mitigation measures such as sump pumping to control perched water inflows has been recommended in the BIA.
- 4.9. The geotechnical parameters adopted in the retaining wall and settlement calculations are presented in the BIA. The undrained shear strength of the Head Deposits and London Clay are now provided in the revised Structural Engineer's Basement Impact Assessment and are accepted.
- 4.10. A Structural Strategy report has been provided and the construction sequence is described in the BIA. The retaining wall construction is through underpinned reinforced concrete walls cast in situ down to formation level in a traditional hit and miss sequence. Underpins will be used along the western face of the excavation and will be initially propped and later supported by reinforced concrete buttresses. The Reinforced Concrete wall on the eastern side of the slab is to be constructed in short lengths in an underpinning sequence. Similarly, the western side will be underpinned, however, a section of the proposed basement wall will be cast directly against the wall of the adjacent No. 12 for its entire length, as the foundations of No.12 are at a lower elevation than the proposed basement.
- 4.11. The northern, southern and remainder of the eastern faces of the excavation will be open cut slopes, close to the final angle of the proposed sloped lightwells. It is assumed that some form of engineered solution, such as reinforced fill, will be used to support the cut slopes at an appropriate angle. This will be subject to further assessment of the slopes and designed by the appointed temporary works contractor; as such it is outside the scope of this audit.
- 4.12. A GMA and damage assessment are provided to demonstrate that ground movements and consequential damage to neighbouring properties will be within the LBC's policy requirements. The analyses were carried out using the Oasys programme PDisp and XDisp. Sensitive structures relevant to this assessment include Nos 12, 14 and 14A Keats Grove, to the east, west and northwest of No12B respectively.
- 4.13. The GMA has been undertaken for the proposed development and considers ground movements resulting from the underpinning and basement excavation.
- 4.14. Considering the proposal at this current stage it is accepted that damage to neighbouring buildings will not exceed Category 1 (Very Slight). However, the stability of the sloping lightwell should be insured at all times and their design should be undertaken by a specialist contractor. If the proposal is going to change then the GMA should be updated accordingly.

- 4.15. The BIA indicates that a monitoring regime will be scoped to measure the movements during the construction stages, to verify that they are within the predicted range and to ensure that the impact on neighbouring structures is acceptable. The precise monitoring strategy will be developed at a later stage, and it will be subject to discussions and agreements with the owners of the adjacent properties and structures. Contingency measures will be implemented if movements of the adjacent structures exceed predefined trigger levels.
- 4.16. The Arboricultural Report indicates that trees are going to be removed. The revised BIA submission confirms that the neighbouring properties will not be impacted by the tree removal. Adjacent footings to the lower existing basement of 12 Keats Grove will not be impacted by the removal of the nearest tree the tulip 4m away in the garden of 12b. To the west of the site the nearest tree to number 14 is an 8m high birch tree 8m from the building; its removal will not impact the footings of number 14 from inspection of chart 1 in Chapter 4.2 of the NHBC Standards.

5.0 CONCLUSIONS

- 5.1. The qualifications of the individuals involved in the production of the BIA meet the requirements of CPG Basements.
- 5.2. Screening and scoping assessments are presented, supported by desk study information.
- 5.3. The proposed excavation will be founded within the firm Head Deposits or the firm to stiff London Clay.
- 5.4. Geotechnical parameters are provided and accepted.
- 5.5. All external hardstanding and hard landscaping areas will be formed in permeable paving such that an increase in impermeable areas is not anticipated.
- 5.6. The BIA states that groundwater may be encountered during the basement excavation and indicates the potential need for localised dewatering from sumps.
- 5.7. According to the utility data provided, no underground infrastructure (utilities) has been identified within the zone of influence of the proposed works.
- 5.8. The BIA confirms that the neighbouring properties will not be impacted by the tree removal.
- 5.9. The Ground Movement Assessment (GMA) has been provided. The results of the Building Impact Assessment considering the proposal at the current stage indicate damage to neighbouring buildings will not exceed Category 1 (Very Slight). However, the stability of the sloping lightwell should be ensured at all times and their design should be undertaken by a specialist contractor. If the proposal is going to change then the GMA should be updated accordingly.
- 5.10. Based on the revised submissions it can be confirmed that the BIA meets the requirements of Camden Planning Guidance: Basements.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Mojan Green - Hampstead Conservation Area Advisory Committee (HCAAC)	-	22 June 2022	Risk of Flooding	See Section 4.6

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	Utility data not provided and is requested.	Closed – See Section 4.5	04/11/2022
2	Land Stability	Undrained shear strengths not provided and are requested.	Closed – See Section 4.9	04/11/2022
3	Land Stability	Assessments of impact of tree removal on neighbouring properties is requested.	Closed – See Section 4.16	04/11/2022
4	Land Stability	Clarification is requested regarding whether underpins will be adopted along the eastern face of the excavation.	Closed – See Section 4.10	04/11/2022
5	Hydrology	Clarification regarding the increase in hardstanding areas is requested.	Closed – See Section 4.6	04/11/2022
6	Land Stability	Considering the proposal at this current stage it is accepted that damage to neighbouring buildings will not exceed Category 1 (Very Slight). However, the stability of the sloping lightwell should be insured at all times and their design should be undertaken by a specialist contractor. If the proposal is going to change then the GMA should be updated accordingly.	Note Only	

Appendix 3: Supplementary Supporting Documents

None

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