

4 Keats Grove, NW3 2RT

**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 4 Keats Grove (planning reference 2017/5913/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) and supplementary information has been prepared by a firm of engineering consultants, although the qualifications of the authors are unknown.
- 1.5. The proposed development involves the deepening of an existing lower ground floor area to a studio building to the front of the property, for the installation of a pool and plant room.
- 1.6. The BIA has confirmed that the proposed basement will be founded within London Clay Formation.
- 1.7. It is unlikely that the ground water table will be encountered during basement foundation excavation, however has been considered within the construction sequencing if it is found.
- 1.8. The BIA discusses a typical basement construction for single storey basements with a standard form of construction sequencing.
- 1.9. It is accepted that the proposal will not adversely impact ground water flows.
- 1.10. A ground movement assessment is required to be provided.
- 1.11. An outline movement monitoring strategy is required.
- 1.12. It is accepted that the surrounding slopes to the development site are stable.
- 1.13. It is accepted that the proposal will not significantly impact surface water drainage.
- 1.14. An outline programme of works is required.
- 1.15. It is accepted that it is not in an area subject to flooding.

- 1.16. Given the above it cannot be confirmed that the proposals adheres to the requirements of CPG4.
A number of requests for additional information have been provided in appendix 2.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 8/1/2018 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 4 Keats Grove, Hampstead and 2017/5913/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:
- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.
 - Camden Planning Guidance (CPG) 4: Basements and Lightwells.
 - Camden Development Policy (DP) 27: Basements and Lightwells.
 - Camden Development Policy (DP) 23: Water.
 - Local Plan 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;
 - c) avoid cumulative impacts upon structural stability or the water environment in the local area, and;
 - d) 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 *"Excavation of basement to include pool and plant room, alterations to fenestration and access, installation of rooflight, all to studio building in the front garden (Class C3)."*

The Audit Instruction also confirmed 4 Keats Grove, or was a neighbour to, listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal on 9/3/18 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA)
- Ground Investigation Report (GI)
- Site Specific Flood Risk Assessment (SFRA)
- Arboricultural Survey Impact Assessment
- Planning Application Drawings consisting of:
 - Location Plan
 - Existing Plans
 - Demolition Plans
 - Proposed Plans
- Planning Comments and Response

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Unknown	Names only given in each of the BIA, FRA & SIR, all conducted by Richard Jackson Engineering consultants.
Is data required by Cl.233 of the GSD presented?	No	A programme of works is not 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 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	Yes – a reasonable ground movement assessment has been conducted. The scoping study impacts have been studied in further detail within the Impact assessment with appropriate mitigation items indicated.
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	Pits dug June 2016, further monitored October 2016.
Is the ground investigation informed by a desk study?	Yes	Summary provided of a previous report.
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	No	Report mentions immediate proximity of proposed basement to neighbour's drive, however does not discuss any further below ground works to adjacent properties.
Is a geotechnical interpretation presented?	Yes	The GI Report advises the use of 135kN/m ² bearing pressure for strip footings.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Provided in Appendix A. Typical underpinning sections and details proposed.
Are reports on other investigations required by screening and scoping presented?	Yes	
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	No	Adjacent properties have not been considered, with justification of the development proposed being over 6m from other neighbouring structures.
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	No	A formal GMA has not been carried out

Item	Yes/No/NA	Comment
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?	Unclear	Adjacent properties have not been considered, with justification of the development proposed being over 6m from other neighbouring structures.
Have the residual (after mitigation) impacts been clearly identified?	No	Additional rainwater runoff to be picked up by upgraded drainage system – no citing of obtaining consent from Thames Water noted.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	No estimates of ground movement or structural impact provided.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	The basement is generally beneath the existing property, with only a small area of new basement extending beneath an area of existing hard standing.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Unclear	A GMA has not been carried out.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	No	A GMA has not been carried out.
Are non-technical summaries provided?	No	

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been prepared by a firm of engineering consultants, Richard Jackson Ltd. The qualifications of the author of the BIA and the associated reports are unknown and not given.
- 4.2. The BIA includes a Ground Investigation Report (GI) and a desk study prepared by Richard Jackson Ltd. A Site Specific Flood Risk Assessment (SFRA) has also been prepared by Richard Jackson Ltd.
- 4.3. The LBC Instruction to proceed with the audit identified that the basement proposal either involved a listed building or was adjacent to listed buildings but gave no details. Neither the Ground Investigation Report nor Basement Impact Assessment identified the listed building as the proposed development or a neighbouring property. From the Historic England Listed Building search it was identified that the number 1 to 4 Keats Grove are all Grade II listed, along with several of the surrounding and opposing properties being listed.
- 4.4. The existing property is a two storey studio building to the front of the property composed of masonry walls and assumed timber flooring, typical construction of the building's age.
- 4.5. The proposed basement consists of a single storey construction formed by lowering an existing lower ground floor area within the studio building at the front of the property, which is separate from the main building. The studio floor is to be lowered by 1.7m and an additional area is to be excavated to the back of the studio building for the installation of plant.
- 4.6. The site investigation consisted of two windowless sampler boreholes (to depths of 6m below ground level) and one trial hole (to the underside of the existing foundations to the studio building). In-situ testing to ascertain soil density and stiffness was undertaken. Soil sampling was conducted for laboratory testing for further understanding of soil properties. One further monitoring visit was undertaken for ground water monitoring, which was approximately a month after formation of the exploratory boreholes and trial hole.
- 4.7. The BIA has identified that the ground level is underlain by Made Ground to a depth of 2.15-2.25mbgl below which lies the London Clay Formation.
- 4.8. No groundwater was recorded during the initial site investigation, however it was found during a subsequent monitoring visit. The applicant has concluded that the groundwater identified beneath the site and is likely to constitute local flows only within the made ground, and perched on top of the London Clay Formation, rather than forming wider strategic flows. This conclusion is accepted.

- 4.9. The BIA states it is 'Unknown' whether there is history of Shrink-swell subsidence in the local area, and/or evidence of such effects at the site.
- 4.10. While the basement is extending outside the perimeter of the existing building by a small amount it is accepted that the impact on surface water flows will be small or negligible, given that the area extended beneath appears to be an existing hard standing area, therefore not reducing any impermeable area.
- 4.11. The trial hole had been dug by existing strip footing foundations, which when drawn in proposals appear to be founded in made ground, extending around the perimeter walls of the existing studio building.
- 4.12. The permanent structure is to consist of watertight reinforced concrete walls and watertight ground bearing basement slab, which is to support a hydrotherapy pool of approximately 5.5m x 3.0m x 1.5m deep. The plant room is approximately 1m deeper in excavation than the pool area, and extends one meter beyond the studio building line on the south elevation to provide an access hatch.
- 4.13. The existing perimeter walls to the studio building are to be underpinned, extending down into the London Clay formation, requiring approximately 600mm wide by 900mm-1800mm deep underpins, carried out in two vertical stages along the south boundary where deepest depth of underpinning is required.
- 4.14. The BIA presents an outline construction methodology. It is proposed to provide temporary sheet piling to the perimeter of the new portion of basement at the rear, with a high level propped wailing beam in order to provide stability during the construction case until the permanent works have been installed. The lowering of the existing basement is proposed to be carried out in a hit and miss sequence. Provision for dewatering has been considered if construction falls below ground water level.
- 4.15. The applicant has not considered if the basement is below the ground water level and if this will be impacted. Within the impact assessment, Clause 1b revised conceptual model contradicts the findings within the Ground Investigation Report. The impact to groundwater flows needs to be considered.
- 4.16. A programme of works had not been provided. An outline programme of works indicating main construction phases and approximate anticipated durations is required.
- 4.17. A ground movement assessment has not been conducted, on the basis that the nearest adjacent property is over 6m away. However, given the Grade II listed status of property, along with the neighbouring properties, a full ground movement assessment should be provided to demonstrate that neither 4 Keats Grove or any of the surrounding properties will experience

damage greater than Burland category 1. The impact of ground movement on the highway should also be considered.

- 4.18. It is accepted that there are no slope stability concerns regarding the proposed development.
- 4.19. A formal movement monitoring strategy has not been proposed. Given the Grade II listed status of property, along with the neighbouring properties, an outline movement monitoring strategy with appropriate trigger levels linked to the anticipated ground movements is required.
- 4.20. It is accepted that the site lies outside train lines and tunnel exclusion zones.
- 4.21. It is accepted that the site lies within a low flood risk area.

5.0 CONCLUSIONS

- 5.1. The Basement Impact Assessment (BIA) has been prepared by a firm of engineering consultants, although the qualifications of the authors are unknown.
- 5.2. The BIA includes a Ground Investigation Report (GI) and Site Specific Flood Risk Assessment (SFRA) has also been prepared by the same consultants with unknown qualifications.
- 5.3. 4 Keats Grove along with a number of the neighbouring properties are Grade II listed.
- 5.4. The proposed basement consists of a single storey construction formed by lowering an existing lower ground floor area within the studio building at the front of the property. The studio floor is to be lowered by 1.7m and an additional area is to be excavated to the back of the studio building for the installation of plant.
- 5.5. The BIA has identified that the ground level is underlain by Made Ground to a depth of 2.15-2.25 metres below which lies the London Clay Formation.
- 5.6. No groundwater was observed in the initial site survey, however it was found during a subsequent monitoring visit. These results do not infer continuous groundwater beneath the site and is likely to be local seepages within the made ground or London Clay Formation.
- 5.7. The BIA states it is 'Unknown' whether there is history of Shrink-swell subsidence at the site. Although no evidence was found on the property or neighbouring structures, further mitigation measures should be provided than those provided in the Assessment of Impacts.
- 5.8. Appropriate temporary works have been proposed with propping during construction, with potential for dewatering if local seepages are found within the London Clay Formation or made ground.
- 5.9. A ground movement assessment needs to be conducted with a damage category to be provided to demonstrate that no greater than damage category 1 will be experienced by all properties within the influence zone of the basement excavation.
- 5.10. A movement monitoring strategy is required to demonstrate that stability will be maintained to the surrounding buildings, including 4 Keats Grove, during construction.
- 5.11. It is accepted that the surface water drainage will not be significantly impacted by the proposed.
- 5.12. It is accepted that there are no slope stability concerns regarding the proposed development and it is not in an area prone to flooding.
- 5.13. An outline programme of works is required.

- 5.14. Given the above it cannot be confirmed that the proposals adheres to the requirements of CPG4.
A number of requests for additional information have been provided in appendix 2.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Only queries pertinent to the scope of the BIA have been listed

Surname	Address	Date	Issue raised	Response
Katz	1 Keats Grove	9/12/17	Absence of Ground movement assessment to neighbouring properties, after numerous incidences of subsidence.	A ground movement assessment has been requested of the applicant.
Paterson	5 Keats Grove	15/12/17	Impact to Drainage Services before and after construction.	The applicant has demonstrated that the impact on surface water drainage will be negligible due to the majority of the basement being beneath the existing building or hardstanding areas.
Paterson	5 Keats Grove	15/12/17	Qualifications of author of BIA	Details of qualifications to demonstrate compliance with CPG4 has been requested of the applicant.
Day (on behalf of Rosefield)	3 Keats Grove	13/12/17	Qualifications of author of BIA	Details of qualifications to demonstrate compliance with CPG4 has been requested of the applicant.
Day (on behalf of Rosefield)	3 Keats Grove	13/12/17	Absence of Ground movement assessment to neighbouring properties, after numerous incidences of subsidence.	A ground movement assessment has been requested of the applicant.

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Stability	A ground movement assessment is required to demonstrate that the applicant's property as well as all neighbouring properties within the influence zone will not experience damage exceeding Burland category 1.	Open	
2	Qualifications	No qualifications of the author of the basement impact assessment report are listed. Qualifications are required to be demonstrated to be in accordance with CPG4.	Open	
3	Stability	An outline movement monitoring strategy is required to demonstrate that damage to the surrounding buildings will not be greater than Burland category 1.	Open	
4	Construction	An outline programme of works indicating the main phases of works and approximate anticipated durations is required.	Open	

Appendix 3: Supplementary Supporting Documents

None

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