

9D The Grove, 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 9D The Grove, N6 6JU (planning reference 2020/4307/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 Byrne Looby and the individuals concerned in its production have suitable qualifications for land stability and hydrology assessment, but not hydrogeology.
- 1.5. The BIA has confirmed that the proposed basement formation level will be within Bagshot Formation. Interpretation of soil parameters for the design of retaining wall are presented. An outline design of a reinforced cantilever retaining wall is included, whilst the construction methodology refers to a piled wall. Further clarification is required regarding the construction methodology for the basement.
- 1.6. It is understood that the neighbouring properties No. 9C and No. 9B are Grade II listed, and that No. 9B has a basement.
- 1.7. With respect to subterranean flows, it is identified that the site is near the boundary of the Highgate Chain catchment area but not within 100m distance of a watercourse, well or potential spring line. The site is underlain by an aquifer. It is concluded in the BIA that it is unlikely that the groundwater table will be encountered during basement foundation excavation. This requires further justification.
- 1.8. It is stated that the site is located within a Critical Drainage Area Group 3\_001. It is stated that the site is at a low risk of surface water and sewer flooding. It is understood that the proposed building will occupy a larger footprint than the existing building by occupying areas of existing garden. This will lead to a change in the impermeable surface area which may impact subterranean flows and surface water. Confirmation of the extent of changes to impermeable areas and resultant impacts is required.

- 1.9. With respect to land stability, the existing and proposed slopes on site are less than 7 degrees. Some works are proposed within the root protection zone of trees and mitigation is proposed. The basement is within 5m of Fitzroy Park and will increase the differential depth of foundation with respect to neighbouring properties Nos. 9B and 9C The Grove.
- 1.10. A ground movement assessment (GMA) has been undertaken which concludes that the impact due to the proposal on neighbouring properties will be within Category 1 on the Burland Scale. However, the potential impact of ground movements along the adjacent Fitzroy Park road is not stated and is required. Additionally, the findings of the GMA are to be confirmed once the construction methodology is clarified.
- 1.11. Utility survey information is not provided. An outline monitoring strategy for the control of construction works is included.
- 1.12. It cannot be confirmed that the BIA complies with the requirements of CPG: Basements until the queries raised in Section 4 and Appendix 2 are addressed.

## 2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 23<sup>rd</sup> October 2020 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 9D The Grove, N6 6JU (Planning reference: 2020/4307/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: Basements. March 2018
- 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.

LBC's Audit Instruction described the planning proposal as "*Demolition of the existing dwelling and construction of a replacement dwelling with associated landscaping*".

The Planning Statement confirms that the site lies within Highgate Village Conservation Area. The Design and Access Statement confirms that the site is neighboured by Grade II listed buildings No. 9B (Park House) and No. 9C (Stables), of which No. 9B has a basement.

2.5. CampbellReith accessed LBC's Planning Portal on 3<sup>rd</sup> November 2020 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment by Byrne Looby, dated August 2020;
- Design and Access Statement by Charlton Brown Architecture & Interiors. Dated June 2020;
- Tree Survey and Arboricultural method statement by TreTec, dated September 2020;
- Structural Strategy Report (SSR)
- Planning Application Drawings consisting of
  - Location Plan: Drawing reference - EX-00-010;
  - Existing Plans and section: Drawing Reference – 1912-EX-00-100 (Ground floor), 200, 201, 300 to 305;
  - Proposed Plans and section: Drawing Reference – 1912-AP-00-300 to 305;
- Planning Consultation Responses.

### 3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	BIA has to be authored or reviewed by an individual with suitable qualification in hydrogeology.
Is data required by Cl.233 of the GSD presented?	No	Further clarification requested regarding construction methodology. Nature of impact on hydrology requires further clarification.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	No	Construction methodology for the retaining wall requires further clarification.
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?	No	Confirmation of change to extent impermeable surfacing required.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	Confirmation of change to extent impermeable surfacing required.
Is a conceptual model presented?	Yes	



Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	No	To be confirmed once impermeable areas clarified.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	Change in surface water flows to be assessed.
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	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	
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?	No	Utility survey to be presented.
Are the baseline conditions described, based on the GSD?	No	Hydrological environment to be defined further.
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	

Item	Yes/No/NA	Comment
Are estimates of ground movement and structural impact presented?	Yes	However, further information required regarding potential movement along Fitzroy Park to the north.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	To be confirmed after clarification is provided regarding change in surface water inflows, impermeable areas and construction methodology of the retaining wall.
Has the need for monitoring during construction been considered?	Yes	
Have the residual (after mitigation) impacts been clearly identified?	No	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	Although, further information required regarding potential movement along Fitzroy Park.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	Impact on water environment to be confirmed.
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?	Yes	Indicated to be less than Category 1.
Are non-technical summaries provided?	Yes	

## 4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out by Byrne Looby and the individuals concerned in its production have suitable qualifications for land stability and hydrology assessment, but not hydrogeology.
- 4.2. The Planning Statement confirms that the site lies within Highgate Village Conservation Area. The Design and Access Statement confirms that the site is neighboured by Grade II listed buildings No. 9B (Park House) and No. 9C (Stables), of which No. 9B has a basement.
- 4.3. It is proposed to demolish the existing two storey property on site in order to construct a two-storey house with a single-storey basement.
- 4.4. In the preliminary sections of the BIA it is stated that c.4m excavation would be required for the construction of basement which will be facilitated by the installation of a contiguous pile retaining wall bearing 7m bgl along the perimeter of the proposed building footprint. However, the design details provided in later sections of the BIA are for a reinforced cantilever retaining wall. Clarification is sought regarding the temporary and permanent retaining proposal, along with additional outline design if required.
- 4.5. A ground investigation was undertaken which identified that the site is underlain by Made Ground up to 1.80m over Bagshot Formation proven to 8m bgl. Although the Bagshot Formation is identified as a Secondary A aquifer, it is stated that no groundwater was encountered during drilling and subsequent monitoring of the exploratory holes. It is noted that only a single round of monitoring was undertaken (18<sup>th</sup> September 2019) prior to assessment and that this was at the end of the summer. Further justification for the groundwater baseline assumptions is required.
- 4.6. It is identified that the site is near the boundary of the catchment area for the Highgate chain of ponds but not within 100m distance of a watercourse, well or potential spring line. It is stated that the lowest point of proposed excavation for the construction is above the mean water level of local ponds.
- 4.7. Given the absence of basement to the neighbouring property No. 9C, the presence of streets and gardens around the site and the absence of groundwater in the exploratory holes during monitoring, it is accepted that the basement will not impede the groundwater flow in the local and wider area. However, the volume of water percolating into the ground depends on the change in impermeable surface area. Further evidence with supporting calculation is requested to confirm the change in permeable surface as a result of the development. It is also requested that the assessment be reviewed by an individual with suitable qualifications as required by CPG. It cannot be currently accepted that the proposal will not impact the hydrogeology of the area.

- 4.8. It is stated that the site is located within a Critical Drainage Area Group 3\_001. It is stated that the site is at a low risk of surface water and sewer flooding. It is understood that the proposed building will occupy a larger footprint than the existing building by occupying areas of existing garden which will lead to a change in the impermeable surface area. However, no evidence is provided to confirm impact due to the change in surface water and sewer inflows due to the proposal. Unless this is provided along with suitable mitigation measures (if required), it cannot be confirmed that the proposal will not impact the hydrology of the area.
- 4.9. The stability screening exercise noted that the existing and proposed slopes on site are less than 7 degrees. It also noted that although trees are not expected to be felled as part of the redevelopment, some works are proposed within the root protection zone of trees. A Tree Survey report is available inclusive of arboriculture method statement and a tree protection plan. This is accepted.
- 4.10. The site is within 5m of a public highway (The Grove) and a private street (Fitzroy Park). The proposal will increase the differential depth of foundation with respect to neighbouring property No. 9C (Stables).
- 4.11. A ground movement assessment (GMA) has been undertaken which assumes that the excavated and supporting soil for the retaining wall is stiff clay. Although the assumptions in CIRIA C580 (now CIRIA C760) are for London Clay, it is accepted that these curves are widely used in a variety of geological strata in London. The GMA concludes that the impact due to proposal on neighbouring properties will be within Category 1 on Burland Scale. This is accepted, however, the impact of potential ground movements along the adjacent Fitzroy Park is not stated and is required.
- 4.12. A geotechnical interpretation including soil parameters for the design of retaining walls is provided. An outline design of a reinforced cantilever retaining wall is included. As stated in Section 4.5, further clarification is sought regarding the proposed construction methodology of the retaining wall in temporary and permanent case, without which the proposed construction sequence and thereby the GMA cannot be accepted. It is noted that a basement construction plan may also be required for further clarification.
- 4.13. Until further information as per Section 4.11 and Section 4.12 is provided, it cannot be confirmed that the proposal will not impact the land stability of the surrounding area.
- 4.14. It is also requested that a utility survey information be provided.
- 4.15. An outline monitoring strategy for the control of construction works is included.

## 5.0 CONCLUSIONS

- 5.1. The Basement Impact Assessment (BIA) has been carried out by Byrne Looby and the individuals concerned in its production have suitable qualifications for land stability and hydrology assessment, but not hydrogeology. A hydrogeologist with CGeol (Chartered Geologist) should approve the BIA as per CPG.
- 5.2. A ground investigation was undertaken which identified that the site is underlain by Made Ground over Bagshot Formation. No groundwater was encountered during drilling and monitoring of exploratory holes. Further evidence is needed for assumption of groundwater baseline conditions.
- 5.3. It is understood that the basement formation level will be within Bagshot Formation. Further clarification is requested regarding the construction methodology of the retaining wall, following which the proposed construction sequence may require revision.
- 5.4. Although it is accepted the basement will not impede groundwater flow, it cannot be confirmed that the proposal will not impact the hydrogeology of the area until adequate evidence/calculation assessing the change in permeable surface area, and any resultant impact, is presented.
- 5.5. Until further information is provided regarding changes to surface water and sewer inflows as a result of the development, along with any potential mitigation measures, it cannot be confirmed that the development will not impact the hydrology of the area.
- 5.6. Potential stability impacts are limited to those due to excavation induced ground movement. Due to the lack in clarity of the proposed construction methodology for the retaining wall and the lack of information regarding potential impact on adjacent Fitzroy Park, it is currently not accepted that the proposal will not impact the land stability of the area.
- 5.7. Utility survey information is requested.
- 5.8. It cannot be confirmed that the BIA complies with the requirements of CPG: Basements related until the queries raised in Section 4 and Appendix 2 are addressed.

## Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Leggett, Grant	9B The Grove	04.11.20	Impact on trees, increase in building footprint.	Arboricultural survey and mitigation measures provided were satisfactory.  The impact on the water environment due to change in building footprint is yet to be assessed. Clarification is sought.
Alan Baxter	On behalf of Fitzroy Park Residents Association	20.10.20	Lack of clarity in construction methodology, inadequacy of site investigation and monitoring, impact on water environment, impact on trees, use of CIRIA 580 (now CIRIA C760) and requirement of trigger levels for monitoring.	Outline monitoring strategy is available.  Arboricultural survey and mitigation measures provided were satisfactory.  Ground investigation undertaken is generally satisfactory, although baseline groundwater conditions to be confirmed.  Although the assumptions in CIRIA C580 is for London Clay, it is accepted that these curves are widely used in a variety of geological strata in London.  Pending issues are queried in the audit report.
Bannatyne, Rebecca	On behalf of 9C The Grove, N6 6JU	-	Impact on water environment, further delineation of ground condition.	Ground investigation undertaken is generally satisfactory, although baseline groundwater conditions to be confirmed.  Further clarification is requested on matters related to water environment.
-	2 Fitzroy Park	-	Comments not relevant to audit.	-

## Appendix 2: Audit Query Tracker



Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	An individual with CGeol qualification to approve the BIA as required by CPG.	Open	
2	BIA	Clarification is required regarding retaining wall construction methodology/form in temporary and permanent case.	Open	
3	BIA	Utility survey information is required.	Open	
4	BIA	Baseline groundwater conditions to be confirmed.	Open	
5	Hydrology	Assessment of impact to surface water and sewer inflows and potential mitigation measures is required.	Open	
6	Hydrogeology	Confirmation, with supporting calculation, required for change in impermeable surface area and resulting change in volume of water percolation into ground.	Open	
7	Land Stability	Assessment of impact of potential ground movements along Fitzroy Park.	Open	

## Appendix 3: Supplementary Supporting Documents

None

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