

**The Grove Lawn Tennis Club,
London N10 3PY**

**Basement Impact Assessment
Audit**

For
London Borough of Camden

Project No.
13979-04

Date
December 2023

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1.0 NON-TECHNICAL SUMMARY

- 1.1 CampbellReith was instructed by London Borough of Haringey (LBH) to carry out an audit on the Basement Impact Assessment submitted as part of the Planning Submission documentation for The Grove Lawn Tennis Club, London N10 3PY (planning reference HGY/2023/0733).
- 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 LBH's policies and technical procedures.
- 1.3 CampbellReith was able to access LBH'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 will comprise the refurbishment of the existing pavilion building to form a one bedroom house, and the construction of two new terraces of housing comprising four units each. The houses will comprise three above ground storeys and a single basement level.
- 1.5 Screening and Scoping exercises have been undertaken for the proposed development, informed by a Desk Study.
- 1.6 A ground investigation has been undertaken and identifies the ground conditions to comprise Made Ground over London Clay.
- 1.7 It is accepted that the development will not impact on the wider hydrogeology of the area. Sump pumping may be required to control perched water ingress from the Made Ground.
- 1.8 Confirmation of the existing drainage scheme for the site is requested. A Flood Risk Assessment has been undertaken and includes recommendations for SuDS that can be included in the development. The drainage proposals will be subject to agreement with Thames Water.
- 1.9 The basement will be formed using contiguous bored piles with a top-down construction method. The use of propping to support the walls during construction has not been confirmed.
- 1.10 Outline design for the retaining walls and a foundation layout plan have not been provided and are requested.
- 1.11 Construction methods for the basement were not known at the time the BIA was produced. Additional information from the structural engineer for the project indicates that the basement will be formed using contiguous bored piles.
- 1.12 A Ground Movement Assessment is recommended and should be undertaken to identify anticipated movements associated with the development and confirm that the works can be undertaken without causing more than Burland Category 1 (Very Slight) damage to neighbouring properties. Further consideration of the overall impact to slope stability is required.

- 1.13 Outline proposals are provided for a movement monitoring strategy during excavation and construction. Trigger levels for the monitoring have been provided but should be updated to reflect the Ground Movement Assessment once completed. These will be agreed during Party Wall Negotiations.
- 1.14 Queries and requests for information are summarised in Appendix 2. Until the queries raised are addressed, the BIA does not meet the requirements of LBH guidance on basements.

2.0 INTRODUCTION

2.1 CampbellReith was instructed by London Borough of Haringey (LBH) on 15 November 2023 to carry out an audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for The Grove Lawn Tennis Club, London N10 3PS, planning reference HGY/2023/0733.

2.2 The audit reviewed the BIA for potential impact on land stability and local ground and surface water conditions arising from basement development. An audit of land quality/contamination issues has not been undertaken and is outside the scope of this report.

2.3 A BIA is required for all planning applications with basements in Haringey in general accordance with policies and technical procedures contained within:

- Development Management DPD. July 2017.
- Draft Basement Development Guidance Note. June 2012.
- Haringey Council Strategic Flood Risk Assessment

2.4 The BIA should demonstrate that schemes:

- a) maintain the structural stability of neighbouring properties;
- b) do not adversely affect drainage and run off or cause 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 and to make recommendations for the detailed design.

2.5 Although the site lies within the London Borough of Haringey, it was agreed that the audit of the screening, scoping and impact assessment would follow the procedure presented in the London Borough of Camden (LBC) Planning Guidance: Basements as it is widely known and is considered to provide a robust approach to the issues of concern.

2.6 LBC's Audit Instruction described the planning proposal as "*Redevelopment of site including conversion of existing pavilion into 1.no residential dwelling and erection of 8.no residential dwellings, associated landscaping and cycle storage*".

2.7 The development neither involves, nor is a neighbour to, listed buildings.

2.8 CampbellReith accessed LBH's Planning Portal on 16 November 2023 and gained access to the following relevant documents for audit purposes:

- BIA Stage 1 Screening & Stage 2 Scoping Report by Southern Testing, ref. J15256-1, Issue 1, dated 02 November 2022.
- BIA Stage 3 Ground Investigation Report by Southern Testing, ref. J15256-2, Issue 1, dated 08 November 2023.

- Stage 4 Basement Impact Assessment (BIA) by Southern Testing, ref. J15256-3, Issue 1, dated 15 November 2022.
- Flood Risk Assessment by Base Energy, revision 0, dated 27 June 2023.
- Surface Water and SuDS Assessment by Base Energy, revision 2, dated 28 February 2023.
- Planning Application Drawings by Adam Architects, all dated January 2023, project number 6299, consisting of:
 - Location Plan, ref PL01 and PL01A
 - Existing Site Plan, ref PL02 and PL02A
 - Existing Pavilion Plan, ref PL07 and PL07A
 - Existing Surrounding Elevations, ref PL08 and PL09
 - Proposed Context Site Plan, Elevations and Site Sections, ref PL03, PL04 and PL05
 - Tree Constraints Overlay, ref PL06
 - Proposed Floor Plans and Elevations, The Chine, ref PL10 to PL16
 - Proposed Floor Plans and Elevations, Cascade Ave, ref PL17 to PL23
 - Proposed Pavilion, ref PL24 and PL24A
 - Areas Schedule, The Chine, ref PL25
 - Areas Schedule, Cascade Ave, ref PL26
 - Areas Schedule, Pavilion, ref PL27
 - Dimensioned Site Section, PL28 and PL28A
 - Proposed Levels, ref PL29
 - M&E Approach, ref PL30
- Planning Consultation Responses
- Additional information from the project Structural Engineer (Appendix 3)

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item		Comment
Are BIA Author(s) credentials satisfactory?	Yes	
Is data required by Cl.233 of the Arup's Guidance for Subterranean Development presented?	No	Structural information is not provided. Impact to stability of neighbouring properties is not complete.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	No	
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	It is noted that responses to Q2 and Q4 should be 'yes' and Q6 should be 'Unknown'. However, these issues appear to have been brought forward to scoping and additional reports produced to address the surface water flooding risk.
Is a conceptual model presented?	Yes	

Item		Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	
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	Stage 3 Ground Investigation Report provided.
Is monitoring data presented?	Yes	Three readings taken at weekly intervals.
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	Neighbouring properties do not have basements or lower ground floor levels.
Is a geotechnical interpretation presented?	Yes	Section 12.3 of the Stage 3 Ground Investigation Report.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 12.3 of the Stage 3 Ground Investigation Report.
Are reports on other investigations required by screening and scoping presented?	Yes	Flood Risk Assessment, Surface Water & SuDS Assessment and Arboricultural Report have also been undertaken.
Are the baseline conditions described, based on the GSD?	Yes	

Item		Comment
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	No	Section 13 of the Stage 4 Report identifies the absence of structural information and that a ground movement assessment may be required.
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?	Yes	
Has the need for monitoring during construction been considered?	Yes	As part of the additional information presented in Appendix 3.
Have the residual (after mitigation) impacts been clearly identified?	No	Impact to neighbouring properties has not been fully assessed.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	The BIA identifies ground movement to neighbouring structures as a potential impact of the work however no further assessment is provided.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	Confirmation of the existing drainage scheme on site is required.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	

Item		Comment
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	No	A Ground Movement Assessment is identified as a mitigation measure in the BIA but has not been carried out.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

- 4.1 The Basement Impact Assessment (BIA) has been carried out by Southern Testing and the individuals concerned in its production have suitable qualifications.
- 4.2 The site is an approximate rectangle bound by roads Cascade Avenue and The Chine to the east and west respectively. Residential properties occupy the land to the north and south of the site. The site currently comprises a single storey pavilion building in the north, three tennis courts surrounded by fencing, and overgrown with vegetation comprising shrubs and mature trees.
- 4.3 The area slopes from west to east from c. 56.50m OD to c. 52.00m OD. Within the site, two of the tennis courts on the west side of the site are formed at a level of 54.80m OD and the third court in the east is at an approximate level of 53.60m OD. A retaining wall of 1.10m height is shown to separate these two areas. At the site boundaries slopes are shown leading up or down to the respective adjacent roads. The pavilion building has an elevation of c. 55.55m OD. The maximum excavation required for the basement appears to be c. 3.50m.
- 4.4 It is proposed to refurbish the pavilion building to form a one-bedroom house, and to construct two terraces of four houses each in the area currently occupied by tennis courts. The houses are proposed to comprise three above ground storeys and a single basement level. The two rows of houses will front onto the roads to the east and west of the site and have rear gardens in the centre of the site.
- 4.5 Southern Testing have undertaken a desk study of the site, which informs a screening exercise adapted from the questions provided in the Camden Planning Guidance for Basements.
- 4.6 A Ground Investigation (GI) was undertaken at the site by Southern Testing. A total of two hand-held window samples were undertaken; one in the tennis courts on the east and on the west side of the site. These show that the site is underlain by Made Ground over London Clay.
- 4.7 No groundwater was encountered during drilling and each hole was installed with a groundwater monitoring standpipe. Three rounds of monitoring were completed and water levels between 2.80m and 0.85m depth were recorded. The GI report identifies that the proposed basements would extend below the recorded groundwater levels, but that groundwater flow from the London Clay may be controlled with sump pumping. The report suggests that groundwater seepages from the Made Ground may be more variable than the London Clay and that basement construction should include provision for managing potential water ingress.
- 4.8 Based on the ground conditions and limited groundwater encountered, it is accepted that the proposed basements will not impact the hydrogeology of the area.
- 4.9 The screening exercise states that, as the site is currently occupied primarily by hardstanding comprising tennis courts, the development will result in a decrease of impermeable area due to the formation of front and rear gardens spaces for the houses.

- 4.10 Despite the decrease in hardstanding due to the development, it is not clear whether there will be a corresponding decrease in the amount of water draining to the sewer network. The topographic survey of the site does not identify gullies around the tennis courts therefore it is not known whether surface water from these areas of hardstanding currently drains to the sewer network or is allowed to run off into the soft landscaping areas surrounding the site and infiltrate to the ground. Confirmation of the existing drainage scheme at the site is requested.
- 4.11 A Surface Water and SuDS Assessment is provided for the proposed development. The SuDS proposed for use at the site include rainwater recycling, permeable paving and a controlled outlet to the public sewer. The site area is identified in the Surface Water and SuDS Assessment report as being 0.2ha, however it is noted that the decrease in hardstanding areas is often incorrectly stated as being 1ha, whereas the accompanying calculations suggest this should be 0.1ha. It is not clear whether the rear gardens will drain into the ground or comprise hardstanding that will drain to the sewer network. The document states that Thames Water will be consulted regarding the intention to discharge surface water to the sewer network, to confirm capacity and agree flow rates.
- 4.12 The GI report identifies a bearing capacity of 100kN/m² for foundations bearing onto the natural London Clay. Section 12.3 provides geotechnical parameters for the London Clay.
- 4.13 No information relating to the construction method for the basement was provided with the original planning submission. Information relating to the construction methods for the development was provided by e-mail and is presented in Appendix 3.
- 4.14 It is proposed to form the basements using a contiguous pile wall system. The use of propping has not been decided yet and the excavation will be undertaken using a top-down method. Anticipated movements during basement construction are anticipated to be on the order of +/-2mm however no justification or calculations to support this value have been provided.
- 4.15 Outline calculations for the retaining walls have not been provided and are requested. A foundation layout plan is requested, showing the extents of the proposed contiguous pile walls across the development.
- 4.16 The BIA report states that a Ground Movement Assessment may be required to estimate the potential category of damage to the neighbouring buildings and to estimate the ground movements affecting the highway and associated utilities. It is recommended that this be undertaken to provide justification for the movement values given and to confirm that the works can be undertaken without causing more than Burland Category 1 (Very Slight) damage to neighbouring properties.
- 4.17 Further consideration of the overall impact to slope stability of the development and surrounding area is required due to the sloping topography and stepped nature of the proposed basements and rear garden areas.

- 4.18 The use of a monitoring system during piling and excavation has been identified in the responses provided in Appendix 3. Amber and Red trigger values of 4mm and 7mm respectively have been proposed. These values should be updated following completion of the Ground Movement Assessment, to reflect the actual amounts of vertical and horizontal movement anticipated.

5.0 CONCLUSIONS

- 5.1 The Basement Impact Assessment (BIA) has been carried out by Southern Testing and the individuals concerned in its production have suitable qualifications.
- 5.2 It is proposed to refurbish the pavilion building to form a one-bedroom house, and to construct of two new terraces of housing comprising four units each. The houses will comprise three above ground storeys and a single basement level.
- 5.3 Screening and Scoping exercises have been undertaken for the proposed development, informed by a Desk Study.
- 5.4 A ground investigation has been undertaken and identifies the ground conditions to comprise Made Ground over London Clay.
- 5.5 It is accepted that the development will not impact on the wider hydrogeology of the area. Sump pumping may be required to control perched water ingress from the Made Ground.
- 5.6 Confirmation of the existing drainage scheme for the site is requested. A Flood Risk Assessment has been undertaken and includes recommendations for SuDS that can be included in the development. The drainage proposals will be subject to agreement with Thames Water.
- 5.7 The basement will be formed using contiguous bored piles with a top-down construction method. The use of propping to support the walls during construction has not been confirmed.
- 5.8 Outline design for the retaining walls and a foundation layout plan have not been provided and are requested.
- 5.9 The BIA report states that a Ground Movement Assessment may be required to estimate the potential category of damage to the neighbouring buildings and to estimate the ground movements affecting the highway and associated utilities. It is recommended that this be undertaken to provide justification for the movement values given and to confirm that the works can be undertaken without causing more than Burland Category 1 (Very Slight) damage to neighbouring properties.
- 5.10 Further consideration of the overall impact to slope stability of the development and surrounding area is required.
- 5.11 Outline proposals are provided for a movement monitoring strategy during excavation and construction. Trigger levels for the monitoring have been provided but should be updated to reflect the Ground Movement Assessment once completed. These will be agreed as part of the Party Wall Negotiations.
- 5.12 Queries and requests for information are summarised in Appendix 2. Until the queries raised are addressed, the BIA does not meet the requirements of LBH guidance on basements.

Appendix 1

Consultation Responses

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Darwell-Smith	Unknown	September 2023	Concerns relating to flooding and groundwater flooding associated with the basement	Since the submission of this planning objection document a Flood Risk Assessment has been produced for the site. Groundwater has been considered within the BIA and mitigation for any perched groundwater encountered during construction has been provided.

Appendix 2

Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Hydrology	The existing drainage scheme for the site should be confirmed.	Open – 4.10	
2	Land Stability	Outline calculations for the retaining walls have not been provided and are requested. A foundation layout plan is requested, showing the extents of the proposed contiguous pile walls across the development.	Open – 4.15	
3	Land Stability	The BIA report states that a Ground Movement Assessment may be required to estimate the potential category of damage to the neighbouring buildings and to estimate the ground movements affecting the highway and associated utilities. It is recommended that this be undertaken to provide justification for the movement values given and to confirm that the works can be undertaken without causing more than Burland Category 1 (Very Slight) damage to neighbouring properties.	Open – 4.16	
4	Land Stability	Further consideration of the slope stability of the proposed development and surrounding area is requested due to the sloping topography and stepped nature of the proposed basements and rear garden areas	Open – 4.17	
5	Land Stability	The use of a monitoring system during piling and excavation has been identified in the responses provided in Appendix 3. Amber and Red trigger values of 4mm and 7mm respectively have been proposed. These values should be updated following completion of the Ground Movement Assessment, to reflect the actual amounts of vertical and horizontal movement anticipated	Open – 4.18	

Appendix 3

Supplementary Supporting Documents

E-mail Correspondence

From: ROK Developments <rokdevelopments.london@gmail.com>
Sent: 05 December 2023 05:46
To: Katharine Barker
Subject: basement construction method

Dear Katharine,

Please see the responses to your recent questions from our structural engineer below:

1. What form will the basement excavation take (eg. Contiguous pile wall or open excavation with RC retaining walls)?

It is anticipated that due to the proximity of the housing and the adjacent highways the only practical and safest method is to undertake the basement construction by contiguous piling. It is anticipated that this would be by bored piling and dependent on testing this may be cased or not depending on ground conditions and water table levels.

2. How will the excavation be carried out (Use of propping? Bottom-up or top-down construction sequence)?

Once the contiguous pile system is in place a ground beam will be formed stabilising the top edge of the pile system, this will be braced as necessary, although it is hoped that the pile system will be self-supporting. The soil will then be removed by traditional excavation using excavators removing spoil from top to bottom

3. What sort of ground movements are expected to be generated from the basement construction?

Due to the formation of the basements by contiguous piling minimal ground movement is anticipated +/- 2mm.

4. How will these ground movements impact neighbouring properties/roads?

Prior to commencement Party Wall Awards will need to be in place with the adjoining properties. It is likely that these will require specific requirements on monitoring and these may vary from property to property depending upon the agreements with the individual surveyors. However, it is anticipated that a system of 3D reflective targets and precise level targets will be installed on both properties and individual ground stations. Monitoring of the stations would be undertaken twice weekly during the piling and excavation. Traditional trigger values are Amber 4mm and Red 7mm. Works would be suspended should amber values be reached to investigate the cause and providing that this was acceptable the excavation continued. Should red trigger values be reached excavation would be stopped and the methods reappraised.

With the ground movements designed for and method of construction we do not anticipate that these values will cause significant ground movement to adjacent structures or infrastructure.

5. Will any monitoring or mitigation measures be used to control movements during construction?

Yes, as above and in addition there will be both vibration and dust monitoring.

Vibration monitoring shall be by an independent specialist company incorporating monitors on the individual properties immediately adjacent to the works. Again, as Party Wall Awards will be in place it is anticipated that vibration monitoring will be agreed within these documents.

Dust and emissions monitoring will be in accordance with the Mayor of London Supplementary Planning Guidance.

In addition, there will be CTMP in place which will identify schools and other properties/situations that will require special consideration with regard to traffic movement, deliveries and the like.

Please let us know if you need any more info,

Regards,

Veronica

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