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Basement Impact Assessment Audit

12 Pilgrim's Lane, London NW3 1SN

For
London Borough of Camden

Project No.
14291-21

Date
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APPENDICES

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 12 Pilgrim's Lane, London, NW3 1SN (planning reference 2025/0809/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 qualifications of the individuals involved in the production of the BIA are in accordance with LBC guidance.

1.5 The proposals include the extension and deepening of the existing lower ground floor level as part of significant alterations to the house. Additional information provided confirms that the new proposal does not include a pool.

1.6 The BIA has confirmed that the proposed basement will be founded within London Clay. The site is underlain by an unproductive aquifer, no significant water ingress during construction is anticipated.

1.7 Screening and scoping assessments are presented, supported by desk study information.

1.8 Geotechnical parameters to inform design have been provided.

1.9 The basement is to be formed using mass concrete underpinning. Additional information has been provided to clarify the proposed construction method of the northern retaining walls.

1.10 It is accepted that the proposed development will not adversely affect the hydrology and hydrogeology of the local or wider environment.

1.11 Further comment on the sloped ground has been provided, and it is accepted that the proposed development will not impact the existing slopes assuming the works are carried out as specified in the application documents and drawings.

1.12 The Ground Movement Assessment (GMA) has been updated and is accepted to be suitably conservative for the proposed development.

1.13 It is confirmed that the BIA complies with the requirements of CPG: Basements and the Principles for Audit set out in the Basement Impact Assessment (BIA) Audit Service Terms of Reference & Audit Process.

2.0 INTRODUCTION

2.1 CampbellReith was instructed by London Borough of Camden (LBC) on 10th March 2025 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 12 Pilgrim's Lane, London, NW3 1SN and Planning Reference 2025/0809/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.
- Hampstead Neighbourhood Plan

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 "*Erection of lower ground/basement and ground floor extensions, extending to side and rear. erection of roof extension to front two storey part and installation of three dormer windows at front and three dormer windows at rear. replacement windows/doors and creation of ground floor terrace to the side and rear.*"

2.6 The Audit Instruction confirmed 12 Pilgrim's Lane is not involved, nor is a neighbour to, any listed buildings.

2.7 CampbellReith accessed LBC's Planning Portal on 4th April 2025 and gained access to the following relevant documents for audit purposes:

- Site Investigation and Basement Impact Assessment by Geotechnical & Environmental Associates (GEA) dated December 2024, reference J21282, revision 3 (provided in Appendix D of the Engineer's Planning Report).

- Engineer's Planning Report produced by ElliottWood Partnership Ltd, dated December 2024, ref. 2210419, rev. P2. The appendices include the following:
  - Proposed Lower Ground Floor structural drawing by ElliotWood dated August 2023, reference 2210419-EWP-ZZ-LG-DR-S-0900
  - Retaining wall design calculations dated 26th January 2024
  - Outline Construction Method Statement Sections by ElliotWood dated December 2024, reference 2210419-EWP-ZZ-XX-SK-S-0050
  - Proposed and Existing drawings by Wolff Architects. Revision 0 drawings.
  - Measured survey by Target Surveys dated September 2021, reference 4858/1A.
- Flood Risk Assessment by ElliotWood dated December 2024, reference 2210419-EWP-ZZ-XX-RP-C-0001, revision P02.
- Sustainable Drainage Strategy Report by ElliotWood dated December 2024, reference 2210419-EWP-ZZ-XX-RP-C-0002, revision P02.
- Design & Access Statement by Wolff Architects dated August 2024, reference 2160-PL-DAS_P1, revision V1.
- Arboricultural Survey by Marcus Foster Arboricultural Design & Consultancy dated October 2024, reference AIA/MF/0195/24

2.8 The following updated information was provided for review on 7th May 2025 following issue of the D1 audit:

- Site Investigation and Basement Impact Assessment by Geotechnical & Environmental Associates (GEA) dated April 2025, reference J21282, revision 4
- Response summary issued by ElliotWood
- Drawings produced by Point Design dated January 2025
  - Underpinning – Phase 1 Plan & Sections, reference 4070-08
  - Underpinning – Phase 2 & 3 Plan & Sections, reference 4070-09
  - Underpinning – Phase 4 & 5 Plan & Sections, reference 4070-10

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	GEA BIA section 1.3.2
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	Section 2 of Elliott Wood report, BIA Appendix C
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	GEA BIA section 3.0
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	GEA BIA section 3.0
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	GEA BIA section 3.0
Is a conceptual model presented?	Yes	GEA BIA section 7.0
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	GEA BIA section 4.0

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	GEA BIA section 4.0
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	GEA BIA section 4.0
Is factual ground investigation data provided?	Yes	GEA BIA Appendix D
Is monitoring data presented?	Yes	GEA BIA section 5.3
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	GEA BIA section 9.1
Is a geotechnical interpretation presented?	Yes	GEA BIA Section 7.0 and 8.0
Does the geotechnical interpretation include information on retaining wall design?	Yes	GEA BIA section 8.0
Are reports on other investigations required by screening and scoping presented?	Yes	FRA and Arboriculturist report provided
Are the baseline conditions described, based on the GSD?	Yes	
Do the baseline conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	GEA BIA Part 4

Item	Yes/No/NA	Comment
Are estimates of ground movement and structural impact presented?	Yes	
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	Sump pump proposed for water management.
Has the need for monitoring during construction been considered?	Yes	
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	
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1 The Basement Impact Assessment (BIA) has been carried out by engineering consultants Geotechnical & Environmental Associates (GEA). The individuals concerned in its production have suitable qualifications that comply with CPG: Basements. An Engineers Planning Report (EPR) has been produced by ElliotWood Partnership Ltd (ElliotWood).

4.2 The LBC Instruction to proceed with the audit identified that the basement proposal is not involved with a listed building. This is confirmed in the Design & Access Statement which also confirms 12 Pilgrim's Lane is in the Hampstead Conservation Area.

4.3 The site is triangular, measuring roughly 25m northwest to southeast by 30m northeast to southwest at its maximum extent. The site is occupied by a split level two/three-storey house with a paved front garden and soft landscaped rear garden. It fronts onto Pilgrim's Lane to the northwest and southwest and is bounded to the southeast by rear gardens of properties on the northwest side of Downshire Hill and adjoins 14 Pilgrim's Lane to the northeast.

4.4 The proposals include the extension and deepening of the existing lower ground floor level as part of significant alterations to the house. Formation level for the proposed lower ground floor is approximately 3.20m below the existing ground floor, which is 1.20m below the existing lower ground floor. Additional information confirms that the proposed lower ground floor does not include a new pool.

4.5 A ground investigation was undertaken by GEA in September 2021. Site works comprised two boreholes to a depth of 8.45m bgl using a combination of rotary augering and percussive sampling techniques, two window sampler boreholes to a depth of 4.00m bgl, ten foundation inspection trial pits to depths between 0.75m and 1.40m bgl. Made Ground was encountered to depths of 0.60m to 2.00m bgl and the London Clay was proved to full depth of the investigation. The new basement will extend to a depth of c. 3.20m bgl and will be founded within the London Clay.

4.6 Groundwater was not generally recorded during the investigation, but perched water was encountered within the Made Ground in one of the trial pits at c. 0.70m bgl. Groundwater monitoring standpipes were installed in three boreholes within the London Clay and a single monitoring visit (in June 2022) measured the depth to groundwater in the boreholes as between 1.86m and 2.80m bgl.

4.7 Section 3.0 of the BIA provides the screening tables. The screening for the subterranean (groundwater) flow confirms the following:

- Part of the site is mapped as underlain by the Claygate Member, which is designated as a Secondary 'A' Aquifer.
- There is a potential that the proposed basement will extend beneath the water table.
- The proposed basement will result in a change in the proportion of hard surfaced areas.

4.8 The screening for the land stability confirms the following:

- The BIA states that the existing site and surrounding area do not include slopes greater than 7°. The sections provided, and photographs included in the Design Access Statement, suggest that the host building is on sloped ground however, further comment has been provided in the updated BIA to confirm that a topographic survey indicates no slopes exceeding 7° are present on site.
- London Clay is the shallowest strata across parts of the site and there is a history of shrink swell subsidence in the local area.
- No trees will be felled as part of the proposed works.
- There is a possibility that the proposed basement may extend beneath the water table and part of the site is underlain by a Secondary A aquifer.
- The development is within 5m of a highway and will significantly increase the differential depth of the foundations relative to neighbouring properties. The BIA indicates that the neighbouring buildings do not have basements.
- There are no known tunnels within proximity to the development.

4.9 The screening for the surface flow and flooding confirms the following:

- The proposed development will not result in changes to the profile of inflows of surface water received by downstream watercourses.
- The basement will result in a slight increase in the proportion of hardstanding.

4.10 Scoping is presented in Section 4.0 and a summary of the impacts is presented in Section 13.0 of the BIA and confirm the following:

- The ground investigation recorded London Clay directly beneath the Made Ground; the Claygate Member was not encountered. The London Clay is classified as an unproductive stratum and thus cannot support a continuous water table. It is therefore concluded in the BIA that the proposed basement will not have any significant influence on the local hydrogeology.
- GEA outlined that groundwater protection measures are required to mitigate for isolated inflows into the excavation through the Made Ground and sand partings in the London Clay. The BIA recommends that provisions of a sump pump will be adequate.
- Clays susceptible to shrink swell action are present within a depth that can be affected by tree roots. The BIA confirms that no tree felling is proposed as part of the development. As such no impact on neighbouring foundations is anticipated.
- The increase in hardstanding from the proposed basement will reduce the recharge to the underlying ground. A Flood Risk Assessment (FRA) and a Sustainable Drainage Strategy (SuDS) have been produced. The SuDS mentions that the surface water run-off from the proposed development will be managed using permeable paving and below ground geo-cellular attenuation system such that there will be no increase in surface water flooding in the area due to the proposed development.

- The FRA and SuDS state that the development can be constructed and operated safely without increasing the flood risk elsewhere.
- The proposed development will significantly increase the differential depth of the foundations relative to neighbouring properties thus a ground movement assessment (GMA) is required to assess the potential impacts.

4.11 It is accepted that the proposed development will not adversely affect the hydrology and hydrogeology of the local or wider environment. It is noted detailed drainage design will require approval from the lead local flood authority.

4.12 The EPR confirms that the proposed lower ground floor will be constructed in a 'bottom up' construction sequence. The new lower ground floor will be formed of a reinforced concrete box constructed by underpinning of the existing walls using a 'hit and miss' sequence. Reference to drawing 2210419-EWP-ZZ-LG-DR-S-0900 suggests underpinning is proposed for the southern area of the lower ground floor with the construction of the northern area forming a retaining wall along two sides with 'heels' shown along two sections. Additional drawings and a response summary from ElliotWood confirms that the retaining walls in the northern area will be constructed as reinforced concrete retaining walls in a sequential "underpinning like" hit and miss sequence.

4.13 The BIA states that the new retaining walls will not be cantilevered at any stage during the construction process and adequate temporary propping, particularly at the top level, will occur at all times prior to the construction of the permanent concrete floor slabs. The BIA confirms that the underpinning sections should not exceed 1.00m to 1.20m in length. The retaining wall calculations adopt a bearing capacity of 125kPa which is considered appropriate.

4.14 The foundations of the lower ground floor will comprise a monolithic raft slab bound to the underpins. The EPR confirms the loads from the existing building and new proposed loads will be sufficient to resist the anticipated heave reported in the BIA.

4.15 The geotechnical parameters to be adopted for retaining wall and settlement calculations are presented in Section 8.1.1 of the BIA.

4.16 A Ground Movement Assessment (GMA) and damage assessment are provided in Section 9.0 of the BIA to demonstrate that ground movements and consequential damage to neighbouring properties will be within the LBC's policy requirements. Nearby sensitive structures comprise the adjoining 14 and 16 Pilgrim's Lane to the northeast and 10 Pilgrim's Lane to the south.

4.17 Ground movements due to underpinning, excavation and basement redevelopment have been modelled by applying the CIRIA C760 curves using X-Disp software. The updated GMA provided assumes suitably conservative magnitudes of movement both horizontally and vertically for movement associated with a single lift of underpinning.

4.18 It is accepted that the GMA methodology is suitably conservative for the proposed methodology following review of the additional construction drawings provided.

4.19 The results of the GMA indicate damage to neighbouring buildings can be limited to Category 1 (Very Slight) assuming good workmanship.

4.20 The BIA indicates that a monitoring strategy will be developed at a later stage and 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 the predefined trigger levels.

5.0 CONCLUSIONS

5.1 Additional information provided confirms that the new proposal does not include a pool.

5.2 Screening and scoping assessments are presented, supported by desk study information.

5.3 Further comment on the sloped ground has been provided, and it is accepted that the proposed development will not impact the existing slopes assuming the works are carried out as specified in the application documents and drawings.

5.4 It is accepted that the proposed development will not adversely affect the hydrology and hydrogeology of the local or wider environment. Detailed drainage design will require approval from the lead local flood authority.

5.5 The basement is to be formed using mass concrete underpinning. Additional information has been provided to confirm that the northern wall will be constructed as reinforced concrete retaining walls in a sequential "underpinning like" hit and miss sequence.

5.6 The Ground Movement Assessment (GMA) has been updated and is accepted to be suitably conservative for the proposed development.

5.7 It is confirmed that the BIA complies with the requirements of CPG: Basements and the Principles for Audit set out in the Basement Impact Assessment (BIA) Audit Service Terms of Reference & Audit Process.

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Appendix 1

Consultation Responses

None

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Appendix 2

Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	Confirm if a pool is included in the proposed basement layout.	Closed - 4.4	May 2025
2	BIA	Provide further details on the proposed construction methods and temporary works for the northern area of the proposed basement.	Closed - 4.12	May 2025
3	Land stability	Consider the sloped ground across the area and, if required, bring through to scoping.	Closed - 4.8	May 2025
4	Land stability	A conservative assessment should be provided to consider the potential impact of undertaking the underpinning of the existing walls. Note, following clarification of the construction methods and temporary works for the northern section of the basement additional review of the GMA may be required.	Closed - 4.17 & 4.18	May 2025

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Appendix 3

Supplementary Supporting Documents

None

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