

**Basement Impact
Assessment Audit**

70 Gascony Avenue, London,
NW6 4NE

For
London Borough of Camden

Project No.
13693-89

Revision
F1

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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 70 Gascony Avenue, London, NW6 4NE (planning reference 2022/3416/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 engineering consultants Site Analytical Services Ltd. (SAS), along with input from Curtins Consulting Limited. The individuals concerned in its production have qualifications in accordance with CPG Basements.
- 1.5 The BIA has confirmed that the proposed basement will be founded within London Clay and it is unlikely that ground water will be encountered during basement foundation excavation.
- 1.6 The basement will be formed by mass reinforced concrete underpinning with the western perimeter wall having a deeper underpin than the eastern perimeter (along the party wall).
- 1.7 The screening assessment for hydrology is updated to consider the implications of the site being in a Critical Drainage Area.
- 1.8 It is accepted that the development will not impact the hydrogeology, hydrology and slope stability of the surrounding area.
- 1.9 A Construction Method Statement (CMS) is provided along with a temporary works scheme detailing the temporary propping and construction methodology for the underpins.
- 1.10 A Ground Movement Assessment (GMA) has been undertaken. The founding depths of the underpins have been clarified and the assessment updated accordingly.
- 1.11 A Building Damage Assessment has been undertaken and confirms the impact to adjacent structures will not exceed Burland Category 1 (Very Slight).
- 1.12 A utility search presented and confirms the presence of a Thames Water Sewer on Gascony Avenue. Liaison with Thames Water is recommended to agree asset protection criteria.
- 1.13 A movement monitoring strategy is recommended during construction.
- 1.14 Considering the additional information presented, it can be confirmed that the BIA complies with the requirements of CPG: Basements.

2.0 INTRODUCTION

2.1 CampbellReith was instructed by London Borough of Camden (LBC) on 07/12/2022 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 70 Gascony Avenue, London, NW6 4NE and Planning Reference No. 2022/3416/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.
- Kilburn 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 *"Excavation of existing cellar for an enlarged basement extension."*

2.6 The Audit Instruction confirmed 70 Gascony Avenue did not involve, or is a neighbour to, listed buildings.

2.7 CampbellReith accessed LBC's Planning Portal on 12/12/2022 and gained access to the following relevant documents for audit purposes:

- Phase 1 Geotechnical Desk Study by Site Analytical Services Ltd., dated April 2022, Ref No. - SAS 22/34911
- Basement Impact Assessment by Site Analytical Services Ltd., dated April 2022, Ref No. - 22/34911-2
- Construction Method Statement by Martin Redston Associates, dated 5th July 2022

- Retaining Wall Calculations by Martin Redston Associates, dated June 2022
- Structural Drawings by Martin Redston Associates, dated June 2022 consisting of:
 - Basement Foundation Plan, Basement Floor Plan, RC Wall detail, Section drawing.
 - Temporary Works drawing by Martin Redston Associates, dated July 2022
- Planning Application Drawings by Felix DB consisting of:
 - Location Plan, dated 25th November 2021, Rev 1, Drg No. - FDB-70GA-A001-1
 - Existing Plans, dated 10th August 2022, Rev 2, Drg No.s - FDB-70GA-A102 – A206, FDB-70GA-A304- A307, FDB-70GA-A401
 - Proposed Plans, 10th August 2022, Rev 2, Drg No.s - FDB-70GA-A201 – A106, FDB-70GA-A301- A306, FDB-70GA-A402
 - Design Access Statement by Felix DB, dated 10th August 2022

2.8 CampbellReith issued a D1 audit in January 2022 with request for additional information. The following updated documents were submitted by the applicant to answer CampbellReith's queries:

- Basement Impact Assessment by Site Analytical Services Ltd, dated February 2023, Revision 1, Ref No. - 22/34911-2
- Ground Movement Assessment by Curtins Consulting Ltd, dated February 2023, Revision 03, Ref No. – 081114-CUR-XX-ZZ-RP-GE-001
- Desktop Utility Search by Groundwise Searches Ltd dated February 2023, Ref No. - 32750RB-GWS

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Section 2.3 of BIA.
Is data required by Cl.233 of the GSD presented?	Yes	Desktop Study and ground investigation are undertaken.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	Construction Methodology detailing temporary propping and Ground Investigation data provided.
Are suitable plan/maps included?	Yes	Appropriate figures from ARUP GSD are consulted.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	As above.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 3.8 of BIA.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 3.8 of BIA.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 3.8 of BIA. Question 6 is reviewed to consider Critical Drainage Area.
Is a conceptual model presented?	Yes	Section 5.2 and 5.3 of BIA.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.1 of BIA.

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.1 of BIA.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Question 6 has been revised to consider Critical Drainage Area.
Is factual ground investigation data provided?	Yes	Section 5.0 of BIA and within Geotechnical Report present in Appendix B.
Is monitoring data presented?	Yes	Section 5.3 of BIA.
Is the ground investigation informed by a desk study?	Yes	Phase 1 Geotechnical Desk Study.
Has a site walkover been undertaken?	Yes	Section 3.2 of BIA.
Is the presence/absence of adjacent or nearby basements confirmed?	No	Not proven.
Is a geotechnical interpretation presented?	Yes	Section 6.0 of BIA and within Curtins GMA report in Appendix C of BIA.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 6.3 of BIA.
Are reports on other investigations required by screening and scoping presented?	NA	None identified
Are the baseline conditions described, based on the GSD?	Yes	However, presence of neighbouring basement is not confirmed.

Item	Yes/No/NA	Comment
Do the base line conditions consider adjacent or nearby basements?	No	As above.
Is an Impact Assessment provided?	Yes	Section 7.0 of BIA.
Are estimates of ground movement and structural impact presented?	Yes	Within Curtins GMA report in Appendix C of BIA. However, damage to pedestrian footpath not considered in GMA.
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	Temporary propping provided to limit movements to neighbouring properties and infrastructure.
Has the need for monitoring during construction been considered?	Yes	Section 7.3 of BIA.
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	<p>Depth of underpins are clarified.</p> <p>GMA is updated with depth of underpins and movements to highways is considered.</p> <p>A PDisp and XDisp outputs are presented.</p> <p>Presence/absence of any nearby underground infrastructure and utilities is confirmed.</p>

Item	Yes/No/NA	Comment
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Critical Drainage Area is considered
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	However, clarification on the GMA is required.
Are non-technical summaries provided?	Yes	Section 1.0 of BIA

4.0 DISCUSSION

- 4.1 The Basement Impact Assessment (BIA) has been carried out by engineering consultants Site Analytical Services Ltd (SAS), along with input from Curtins Consulting Ltd and the individuals concerned in its production have qualifications in accordance with CPG Basements.
- 4.2 The LBC Instruction to proceed with the audit identified that the basement proposal did not involve a listed building and was not adjacent to listed buildings.
- 4.3 The site is accessed from Gascony Avenue located to the north and comprises a three-storey end-terrace residential property with an existing part-basement, including a small front garden and slightly larger rear garden area. The site is bound by Gascony Avenue to the immediate north, Smyrna Road to the immediate west with residential properties to the east and south.
- 4.4 The proposed basement consists of a single storey construction formed by lowering the existing lower ground floor area at the front of the development site to c. 3.00m below ground level (bgl) and extending it to cover the entire footprint of the existing building.
- 4.5 A ground investigation was carried by Site Analytical Services including a borehole to 15.00m bgl. The ground conditions encountered comprise Made Ground to c. 0.70m bgl and London Clay to depth. Only hand shear vane tests were undertaken to estimate the undrained shear strength of the London Clay.
- 4.6 No groundwater was encountered during drilling; however, groundwater monitoring was undertaken in two occasions in March 2022 within the borehole and the levels indicate groundwater at a depth of 6.12m bgl. It is accepted the proposed development will not adversely affect the wider hydrogeological environment.
- 4.7 The screening exercise for land stability has correctly identified impacts posed by the development and are carried forward to scoping.
- 4.8 The hydrogeology screening has identified the presence of a tributary to the lost river Westbourne approximately 115m east of the site. It is accepted that the development will not impact the hydrogeology of the area.
- 4.9 The hydrology screening exercise identifies the proposed development will not involve in changes to the hardstanding onsite, since the basement will be within the existing building footprint. Question 6 of surface water and flooding screening is revised to consider the location of the property within a Critical Drainage Area and within the Kingsgate Local Flood Zone. The basement is under the building footprint and underlain by an unproductive aquifer. It is therefore accepted the proposed development will not increase the risk of flooding and a Flood Risk Assessment will not be necessary.
- 4.10 The new basement will be constructed using mass reinforced concrete underpinning to the party walls, and the peripheral walls. According to preliminary structural drawings the proposed basement is approximately 3.10m bgl when measured from the underside of the ground floor slab to the base of the basement slab. The maximum excavation depth has been confirmed to be 3.20m bgl and this is used in subsequent assessment.

- 4.11 A Construction Method Statement (CMS) is provided detailing the underpin construction with bays no more than 1.00m wide. A detailed temporary works drawing is provided detailing how temporary props will be utilised to limit movements due to construction. A load takedown is provided within the retaining wall calculations.
- 4.12 The retaining wall calculations use a more cautious bearing pressure than the BIA suggests and this is accepted. Geotechnical parameters including for retaining walls are presented and are considered to be appropriately conservative engineering values.
- 4.13 A Ground Movement Assessment (GMA) has been undertaken by Curtins and is presented in Appendix B of the BIA. Ground movements within the area of the proposed excavation have been estimated using PDisp and the expected movements and impact assessment of the area around the site and surrounding structures have been estimated using XDisp.
- 4.14 The basement of 72 Gascony Road is not considered within the assessment to maintain conservatism and the existing foundations are considered to be at ground level.
- 4.15 Ground movements outside the basement and occurring to neighbouring properties have been estimated using XDisp software, which is based on CIRIA C760. While the CIRIA C760 approach is intended for piled retaining walls, it is accepted that the predicted ground movements are within the range typically anticipated for underpinning techniques carried out with good control of workmanship.
- 4.16 The XDisp analysis assumes a high support stiffness and movements due to excavation and installation are used in the assessment. Subsequent damage assessment indicate damage to be limited within Category 1.
- 4.17 A utility service search is conducted and indicates the presence of Thames Water sewer. This audit addresses the GMA for neighbouring buildings only and Thames Water may require separate assessment to satisfy their requirements and agree asset protection criteria. The GMA estimates ground movements along Gascony Avenue and Smyrna Road using PDisp and resulting settlements were less than 5mm.
- 4.18 Outline proposals are provided for a movement monitoring strategy during construction. A detailed monitoring strategy will need to be produced as part of the Party Wall negotiations.

5.0 CONCLUSIONS

- 5.1 The Basement Impact Assessment (BIA) has been carried out by engineering consultants Site Annalytical Services Ltd. (SAS), along with input from Curtins Consulting Limited and the individuals concerned in its production have qualifications in accordance with CPG Basements.
- 5.2 The BIA has confirmed that the proposed basement will be founded within London Clay and It is unlikely that ground water will be encountered during basement foundation excavation.
- 5.3 The basement will be formed by mass reinforced concrete underpinning with the western perimeter wall having a deeper underpin than the eastern perimeter (along the party wall).
- 5.4 The basement founding depth is clarified and the information within the BIA, structural drawings and Construction Method Statement (CMS) is presented consistently.
- 5.5 The screening assessment for hydrology has been updated to consider the implications of the site being in a Critical Drainage Area.
- 5.6 It is accepted that the development will not impact the stability of the surrounding slopes.
- 5.7 A Construction Method Statement is provided along with a temporary works scheme detailing the temporary propping and construction methodology of the underpins.
- 5.8 A Ground Movement Assessment (GMA) has been undertaken and the founding depths of the underpins are clarified and the assessment updated accordingly.
- 5.9 The GMA accounts for movements due to excavation and installation of the basement. An updated assessment with damage to highway is provided and a XDisp and PDisp inputs and outputs are provided.
- 5.10 A Building Damage Assessment has been undertaken and confirms the impact to adjacent structures will not exceed Burland Category 1 (Very Slight).
- 5.11 A utility search is undertaken and confirms the presence of a Thames Water Sewer on Gascony Avenue. Liaison with Thames Water is recommended to agree asset protection criteria.
- 5.12 A movement monitoring strategy is recommended during construction.
- 5.13 Considering the additional information presented, it can be confirmed that the BIA complies with the requirements of CPG: Basements.

Appendix 1

Consultation Responses

None

Basement Impact Assessment Audit
70 Gascony Avenue, London, NW6 4NE

CampbellReith
consulting engineers

Appendix 2

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Hydrology	Consideration of the site being within a Critical Drainage Area is requested.	Closed – Sections 4.9.	23/03/2023
2	Land Stability	Founding depths of the underpins/ proposed basement will need to be clarified and inconsistencies present within BIA and structural documents will need to be updated.	Closed – Section 4.10	23/03/2023
3	Ground Movement Assessment	GMA to be updated with the following: 1. Founding depths to be clarified. 2. Damage Assessment on surrounding roads. 3. Full PDisp and XDisp input and output to be submitted for review.	Closed – Sections 4.10, 4.16 and 4.17	23/03/2023
4	Land Stability	Utility search to be presented.	Closed – See Section 4.17.	23/03/2023
5	Thames Water Sewer - Note Only	Presence of Thames Water sewer on Gascony Avenue. Liaison with Thames is recommended to agree asset protection criteria before commencing works.	Note Only	Note Only

Appendix 3

Supplementary Supporting Documents

None

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