CampbellReith
consulting engineers

3 Chevington, Garlinge Road, NW2 3TE

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12985-92
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Campbell Reith Hill LLP
15 Bermondsey Square
London
SE1 3UN

T:+44 (0)20 7340 1700
E:london@campbellreith.com
W:www.campbellreith.com

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Author	R Nair, BTech Msc DIC GMICE
Project Partner	E M Brown, BSc MSc CGeol FGS
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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 3 Chevington, Garlinge Road, NW2 3TE (planning reference 2019/5715/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 BIA has been prepared by Card Geotechnics Limited. The document has been prepared by authors with suitable engineering qualifications to assess land stability and hydrology. The report has not been reviewed by a Chartered Hydrogeologist.

1.5. The site is currently occupied by a three-storey masonry terrace house with a rear garden occupying the northern part.

1.6. The proposed development involves the lowering of the existing basement floor of the building to approximately 1.3m below existing slab level, with an extension of the basement into the rear garden at approximately 2.2m below ground level (bgl).

1.7. A site investigation indicates that the proposed basement will be founded within the London Clay Formation, which is designated an unproductive strata. Groundwater was monitored at 3.0m bgl. It is unlikely that the basement will intercept groundwater.

1.8. It is accepted that the site is located away from the influence of any watercourse and is not within the catchment of pond chains on Hampstead Heath. The development will not impact upon the hydrogeological regime of the surrounding area.

1.9. The basement will utilise underpinning techniques, propped in the temporary and permanent cases.

1.10. It is accepted that the site and surrounding area is generally flat, and that the existing site does not include slopes, natural or man-made, greater than 7 degrees and that the proposed works will not result in slopes (unsupported) at the property of more than 7 degrees.

1.11. A Ground Movement Assessment (GMA) has been undertaken to assess the impacts to neighbouring buildings; in the revised submissions the impacts to the surrounding infrastructure (walkway, private access road and underlying utilities) have been assessed.

1.12. In the revised submissions the GMA has been updated. It is considered feasible that the proposed works will cause no more than Category 1 9Very Slight) damage to neighbouring structures, assuming good workmanship.

1.13. A movement monitoring strategy relating to all existing structures is recommended by the BIA during construction and this should be implemented.

1.14. The site is within a Critical Drainage Area. The development proposals will increase the impermeable site area. It is proposed to implement attenuated drainage to mitigate any impacts to the hydrological environment.

1.15. The site is located within a zone of external sewer flooding. A historic surface water flooding event (flooded street) has been recorded between 1975 and 2002, adjacent to the site. Whilst

the site itself is indicated to be at low risk of flooding, standard flood risk mitigation measures should be incorporated into the final design.

1.16. Queries and requests for information are discussed in Section 4 and summarised in Appendix 2. Considering the revised assessments submitted, the BIA meets the requirements of CPG: Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 3rd December 2019 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 3 Chevington, Garlinge Road, NW2 3TE.

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 Basements. March 2018.
- 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 and extension of existing lower ground floor incorporating front and rear single storey extensions; removal of upper ground rear external staircase and alteration from upper ground rear door to window (Use Class C3)."*

2.6. CampbellReith accessed LBC's Planning Portal on 6th January 2020 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment prepared by Card Geotechnics Limited (Reference CG/09436, dated October 2019), inclusive of

  - Existing and proposed development drawings
  - Proposed construction sequence
  - Groundsure OS Historical Maps
  - BGS Historical Borehole logs
  - CGH Borehole log
  - Laboratory Test Results (Geotechncial)

- Planning Application Drawings consisting of

  - Existing and proposed elevation drawing prepared by Estbury Basements (Reference E19-012, dated March 2019);
  - Existing and proposed section prepared by Estbury Basements (Reference E19-013, dated March 2019)

2.7. Between January and June 2020, CampbellReith discussed the queries generated by the BIA Audit (D1) with the authors. A revised BIA was submitted in June 2020 for review:

- Basement Impact Assessment prepared by Card Geotechnics Limited (Reference CG/09436 Rev 1, dated June 2020).

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	The hydrogeological assessment should be undertaken by a Chartered Hydrogeologist.
Is data required by Cl.233 of the GSD presented?	Yes	Utility information provided in the updated submissions.
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	Attenuated drainage proposed in the updated submissions, to mitigate potential impacts.
Is a conceptual model presented?	Yes	
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	The updated BIA addresses potential impacts.

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	The updated BIA addresses potential impacts.
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	Yes	One visit has been made to monitor groundwater level in September 2019, and the data is presented within the BIA.
Is the ground investigation informed by a desk study?	Yes	Presented as 'Site Context' under Section 2 of the BIA report.
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Bound by 2 and 4 Chevington in the south-west and north-east respectively. Being part of a terraced building, it is accepted that the neighbouring properties have foundations similar to that of 3 Chevington.
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?	Yes	The updated BIA addresses potential impacts.
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	

Item	Yes/No/NA	Comment
Is an Impact Assessment provided?	Yes	The updated BIA addresses potential impacts.
Are estimates of ground movement and structural impact presented?	Yes	The updated BIA addresses potential impacts.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	The updated BIA addresses potential impacts.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	The updated BIA addresses potential impacts.
Has the need for monitoring during construction been considered?	Yes	
Have the residual (after mitigation) impacts been clearly identified?	Yes	The updated BIA addresses potential impacts.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	The updated BIA addresses potential impacts.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	The updated BIA addresses potential impacts.
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	The updated BIA addresses potential impacts.
Are non-technical summaries provided?	Yes	Section 8 of the BIA.

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by Card Geotechnics Limited and the individuals concerned in its checking and approval are chartered engineers with suitable experience to assess the land stability and hydrological aspects of the proposed development. However, the BIA has not been reviewed by a professional(s) with suitable expertise in hydrogeology in accordance with LBC guidance.

4.2. The proposed development involves the lowering of the existing basement floor of the building to approximately 1.3m below existing slab level, with an extension of the basement into the rear garden at approximately 2.2m below ground level (bgl).

4.3. The host building, being a part of a three storey terrace, is bound on either side by 2 and 4 Chevington. The proposed rear extension (north) is within 5m of a pedestrian pathway and the proposed works at the south of the property is within 5m of a pedestrian access way.

4.4. Screening and scoping assessments have been undertaken, supported by a desk study broadly in accordance with LBC guidance. However, it was noted that Screening responses in relation to hydrological issues assumed that surface water management scheme (ie SUDS) will be implemented. In the revised submissions, calculations and an attenuated drainage proposal are presented to mitigate potential impacts to the hydrological environment.

4.5. A ground investigation comprising one borehole in the rear garden area, (ground Level at 50.30m OD) has identified that the site is underlain by Made Ground to a depth of 1.1m bgl with weathered London Clay Formation underlying, proven to 6.0m bgl. Groundwater was monitored at 3.0m bgl on one occasion. It is unlikely that the basement will intercept groundwater.

4.6. It is accepted that the site is located away from the influence of any watercourse and is not within the catchment of pond chains on Hampstead Heath. The basement will be founded within the London Clay Formation, which is designated as unproductive strata. The development will not impact upon the hydrogeological regime of the surrounding area

4.7. The basement will utilise underpinning techniques, propped in the temporary and permanent cases. Originally a two stage underpinning scheme was proposed for the deeper rear excavation; the updated submissions confirm this will be implemented as a single stage of underpinning. The proposed sequence of construction is detailed in the BIA and associated drawings are presented in Appendix B. Interpretative geotechnical information is presented.

4.8. It is accepted that the site and surrounding area is generally flat, and that the existing site does not include slopes, natural or man-made, greater than 7 degrees and that the proposed works will not result in slopes (unsupported) at the property of more than 7 degrees.

4.9. A Ground Movement Assessment (GMA) has been undertaken to assess the impacts to neighbouring buildings; the revised submissions also consider impacts to the surrounding road and utility assets, which indicate they will be subject to small movements. Asset owners should be consulted and asset protection criteria agreed, as required.

4.10. The GMA indicates damage to neighbouring structures will be a maximum of Burland Category 1 (Very Slight). The original GMA was considered not to be reasonably conservative. The revised submissions consider movements generated by a single stage of underpinning and the movements predicted are within the range expected considering the depth, scale and construction methodology of the proposed development. Assuming good workmanship, it is accepted that the proposed development can feasibly be constructed whilst limiting damage to a maximum of Category 1 to neighbouring buildings.

4.11. A movement monitoring strategy relating to all existing structures is recommended by the BIA during construction and this should be implemented.

4.12. The extension of the building footprint into the rear garden would increase the impermeable site area. The site is within a Critical Drainage Area. In the revised submissions, calculations and an attenuated drainage strategy is proposed. There will be no impact to the wider hydrological environment.

4.13. The site is located within a zone of external sewer flooding. A historic surface water flooding event (flooded street) has been recorded between 1975 and 2002, adjacent to the site. Whilst the site itself is indicated to be at low risk of flooding, standard flood risk mitigation measures should be incorporated into the final design.

5.0 CONCLUSIONS

5.1. The BIA has been prepared by authors with suitable engineering qualifications to assess land stability and hydrology. The report has not been reviewed by a Chartered Hydrogeologist; however, the assessment is accepted.

5.2. The proposed basement will be founded within the London Clay. There will be no impact to the wider hydrogeological environment.

5.3. The basement will utilise underpinning techniques, propped in the temporary and permanent cases.

5.4. A revised Ground Movement Assessment (GMA) has been undertaken to assess the impacts to neighbouring buildings and assets. The predicted impacts are within policy limits, assuming good workmanship. Asset protection criteria should be agreed with asset owners.

5.5. A movement monitoring strategy relating to all existing structures is recommended by the BIA during construction and this should be implemented.

5.6. The site is within a Critical Drainage Area. An attenuated drainage strategy is to be implemented to mitigate impacts to the hydrological environment.

5.7. Standard flood risk mitigation measures should be incorporated into the final design.

5.8. Queries and requests for information are summarised in Appendix 2. Considering the revised assessments submitted, the BIA meets the requirements of CPG: Basements.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA Format	Underground infrastructure / utilities within zone of influence to be confirmed.	Closed	June 2020
2	Land Stability	Ground Movement Assessment to include the impact on adjacent roads / access and underlying utilities.	Closed	June 2020
3	Land Stability	Ground Movement Assessment to be reviewed in accordance with comments in Section 4 re: movements from 2 stage underpinning; limiting horizontal movements.	Closed	June 2020
4	Hydrology	A drainage strategy with sufficient assessment to demonstrate policy compliance should be provided in order to confirm impacts to the hydrological environment have been mitigated.	Closed	June 2020

Appendix 3: Supplementary Supporting Documents

None