

3 Chevington, Garlinge Road,
NW2 3TE

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 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; the impacts to the surrounding infrastructure (walkway, private access road and underlying utilities) should be assessed.
- 1.12. Further information is required to clarify the methodology and some of the assumptions used within the GMA, as outlined in Section 4.
- 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. Attenuation SUDS have been assumed to be implemented but no details of the proposals have been provided. 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.
- 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. Until the additional information requested has been presented, the BIA does not meet 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 (Geotechnical)
- 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)

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?	No	Utility survey information not included.
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?	No	Profile of inflow and outflow of surface water and its variation due to the increase in impermeable surface area has to be assessed and presented. Currently SUDS assumed but not demonstrated.
Is a conceptual model presented?	Yes	

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	The scoping does not consider impacts to the pedestrian pathway and access way located within 5m of the proposed development and underlying utilities.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	Profile of inflow and outflow of surface water and its variation due to the increase in impermeable surface area has to be assessed and presented. Proposed SUDS should be outlined with sufficient assessment to demonstrate policy compliance.
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	

Item	Yes/No/NA	Comment
Are reports on other investigations required by screening and scoping presented?	No	- Utility survey plan required. - SUDS proposal required. - Ground Movement Assessment to be reviewed further to comments in Section 4.
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	However, SUDS proposals and GMA to be clarified.
Are estimates of ground movement and structural impact presented?	Yes	However, to be clarified as Section 4.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	No	- SUDS proposal required. - Ground Movement Assessment to be reviewed further to comments in Section 4.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	- SUDS proposal required. - Ground Movement Assessment to be reviewed further to comments in Section 4.
Has the need for monitoring during construction been considered?	Yes	
Have the residual (after mitigation) impacts been clearly identified?	No	- SUDS proposal required. - Ground Movement Assessment to be reviewed further to comments in Section 4.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	- Ground Movement Assessment to be reviewed.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	- SUDS proposals to be clarified.

Item	Yes/No/NA	Comment
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	- Ground Movement Assessment to be reviewed.
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 is noted that Screening responses in relation to hydrological issues assume that surface water management scheme (ie SUDS) will be implemented, which requires further clarification.
- 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. A two stage underpinning would be adopted for the deeper rear excavation. 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 impacts to the surrounding infrastructure (walkway, private access road and underlying utilities) should also be assessed. 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). However, the following queries are raised and further clarification should be provided:
- Typically 5mm to 10mm of horizontal and vertical movement may be anticipated per stage of underpinning. The predicted ground movements at the proposed retaining walls, approximately 7mm vertically and 5mm horizontally, are therefore within the range expected for the development, considering the depth, scale and construction methodology, where a single stage of underpinning is proposed. However, where two-stage underpinning is proposed, the movements appear to be underestimated.
 - The GMA has back calculated limiting horizontal movements to ensure damage is maintained within a maximum of Category 1. The <3mm limiting horizontal movements required are not considered reasonably conservative, especially considering the two stages of underpinning proposed.
- 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. Attenuation SUDS have been assumed to be implemented but no details of the proposals have been provided. 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.
- 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 Ground Movement Assessment (GMA) has been undertaken to assess the impacts to neighbouring buildings; the impacts to the surrounding infrastructure (walkway, private access road and underlying utilities) should be assessed.
- 5.5. Further information is required to clarify the methodology and some of the assumptions used within the GMA, as outlined in Section 4.
- 5.6. A movement monitoring strategy relating to all existing structures is recommended by the BIA during construction and this should be implemented.
- 5.7. The site is within a Critical Drainage Area. 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.
- 5.8. Standard flood risk mitigation measures should be incorporated into the final design.
- 5.9. Queries and requests for information are summarised in Appendix 2. Until the additional information requested has been presented, the BIA does not meet 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.	Open	
2	Land Stability	Ground Movement Assessment to include the impact on adjacent roads / access and underlying utilities.	Open	
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.	Open	
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.	Open	

Appendix 3: Supplementary Supporting Documents

None

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