

108a Goldhurst Terrace,
London, NW6 3HR

Basement Impact Assessment
Audit

For

London Borough of Camden

Project Number: 12985-58
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 108a Goldhurst Terrace, London NW6 3HR (planning reference 2018/4019/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 prepared by engineering consultants and the author's qualifications meet CPG Basements 2018 requirements.
- 1.5. The building is not listed or adjacent to listed buildings and it is not within a conservation area. The site is within 5m of a highway or pedestrian right of way. However, the proposed basement will be over 5m away from the pavement.
- 1.6. The proposal includes the construction of a new basement below the existing building's footprint. The basement will extend into the front and rear garden to form lightwells.
- 1.7. A site investigation has been completed and it confirms that the proposed basement will be founded within the London Clay Formation at approximately 3.65m below ground level (bgl).
- 1.8. Groundwater was not recorded during either the investigation works or the subsequent monitoring visit. The proposed development will not impact the wider hydrogeological environment.
- 1.9. LBC flood mapping indicates Goldhurst Terrace was one of the streets flooded in the 1975 and 2002 flood events and the site is within the Goldhurst Local Flood Risk Zone. In the revised submissions, a site specific flood risk assessment is presented which includes flood risk mitigation measures.
- 1.10. The proposed basement will be formed by underpinning. Interpretative geotechnical parameters and outline temporary works information is provided, including an indicative construction programme.

- 1.11. A ground movement assessment has been undertaken which identifies a maximum of Burland Scale Category 1 (very slight) damage to adjacent properties. The revised submission includes assessment of 108 Goldhurst Terrace itself.
- 1.12. The BIA indicates very small movements impacting the highway and utilities are stated to be not impacted. Asset protection criteria should be agreed with asset owners, as applicable.
- 1.13. It is understood that 2no trees will be removed during the works. The revised submissions confirm that removal of the trees will not impact the neighbouring properties' shallow foundations.
- 1.14. A structural monitoring strategy is presented with associated trigger values and contingency actions, which should be adopted during the works.
- 1.15. It is accepted that the development will not impact on the wider hydrological environment.
- 1.16. Queries and requests for information are discussed in Section 4 and summarised in Appendix 2. Considering the revised submissions, the BIA meets the requirements of Camden Planning Guidance: Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 16th May 2019 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 108 Goldhurst Terrace, London, NW6 3HR, Camden Reference 2018/4019/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:

- 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 (2017): 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;

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 basement with extended front lightwell and new rear lightwell; erection of single storey rear extension."

2.6. The Audit Instruction also confirmed 108 Goldhurst Terrace and neighbouring buildings are not listed buildings and do not reside within a Conservation Area.

2.7. CampbellReith accessed LBC's Planning Portal on 28/05/2019 and gained access to the following relevant documents for audit purposes:

- An architectural report titled 'Proposed Residential Extension' by Nicholas Williams.
- A Basement Impact Assessment report dated February 2019 by Croft Structural Engineers.
- A site location plan drawing, an existing plan and elevation drawing, a proposed plan and section drawing and a proposed elevation drawing by Nicholas Williams.
- A Ground Investigation and Basement Impact Assessment report dated February 2019 by Ground & Water Ltd.
- Construction Management Plan dated February 2019 by Croft Structural Engineers.
- Arboricultural Impact Assessment Report dated 23 January 2019 by Arboricultural Consultancy Ltd.

2.8. CampbellReith were provided the following relevant documents for audit purposes:

- A Basement Impact Assessment report dated 13th September 2019 by Croft Structural Engineers.
- A Ground Investigation and Basement Impact Assessment report dated September 2019 by Ground & Water Ltd.
- A Flood Risk Assessment report dated 22nd November 2019 by Croft Structural Engineers.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	
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	BIA and supporting documents.
Are suitable plan/maps included?	Yes	BIA sections 2 and 3.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	BIA sections 2 and 3.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Updated in revised submissions.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Justification are provided for 'No' answers.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	It has not been identified that the site is within the Goldhurst Local Flood Risk Zone. However, mitigation measures are presented in the FRA.
Is a conceptual model presented?	Yes	
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Updated in revised submissions.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Refer to Ground Investigation Report Section 3.2.

Item	Yes/No/NA	Comment
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Updated in revised submissions.
Is factual ground investigation data provided?	Yes	Refer to Ground Investigation Report.
Is monitoring data presented?	Yes	See Ground Investigation Report Section 5.3.
Is the ground investigation informed by a desk study?	Yes	Desk Study information included in appendices.
Has a site walkover been undertaken?	Yes	See BIA Report Section 3.2.1.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	See BIA Report Section 3.2.3.
Is a geotechnical interpretation presented?	Yes	See Ground Investigation Report Section 7.0.
Does the geotechnical interpretation include information on retaining wall design?	Yes	See Ground Investigation Report Section 7.5.
Are reports on other investigations required by screening and scoping presented?	Yes	FRA in revised submissions.
Are the baseline conditions described, based on the GSD?	No	Goldhurst LFRZ to be considered in FRA.
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	See BIA Report Section 8.
Are estimates of ground movement and structural impact presented?	Yes	See Ground Investigation Report Section 7.8. This should state impacts to apartments within 108 Goldhurst Tce.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	Updated in revised submissions.

Item	Yes/No/NA	Comment
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Updated in revised submissions. FRA; tree removal; impact to apartments within 108 Goldhurst Tce.
Has the need for monitoring during construction been considered?	Yes	See BIA Report Section 7.
Have the residual (after mitigation) impacts been clearly identified?	Yes	Updated in revised submissions.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	Updated in revised submissions: tree removal; impact to apartments within 108 Goldhurst Tce.
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	Updated in revised submissions: tree removal; impact to apartments within 108 Goldhurst Tce.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	Updated in revised submissions.
Are non-technical summaries provided?	Yes	See BIA Report Section 1.

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been prepared by Croft Structural Engineers and consists of the main assessment report and the Ground Investigation & Basement Impact Assessment prepared by Ground and Water Ltd. The qualifications of the individuals involved meet the requirements of CPG Basements. In the revised submissions a Flood Risk assessment has been provided.
- 4.2. The LBC Instruction to proceed with the audit identified that the proposal does not involve a listed building or neighbour any listed buildings. The BIA report states that the property is within the South Hampstead conversation area.
- 4.3. The proposal is the refurbishment of the ground floor apartment within an existing four storey terrace house at 108 Goldhurst Terrace. The proposal includes the construction of a new basement below the existing building's footprint. The basement will extend into the front and rear garden to form lightwells.
- 4.4. The proposed basement consists of a single storey construction formed by underpinning the existing foundations of the building. The basement will also be extended below the rear and front gardens to form lightwells. The proposed basement formation level will be at approximately 3.35m to 3.65m below ground level (bgl).
- 4.5. Intrusive ground investigation works were undertaken on the 20th December 2018 by Ground & Water Ltd. The investigation consisted of 1 No. windowless sampler borehole to a depth of 12.45m at the front and 1 No. window sampler borehole to a depth of 5.00m at the rear of the property. The investigation confirms that the site is underlain by Made Ground, proven to 1.0m bgl, over Head Deposits to depths of between 1.90 – 2.40m bgl and London Clay to the maximum depth of the exploratory holes.
- 4.6. Groundwater monitoring was undertaken following the completion of the fieldworks on 17th January 2019. The BIA states that no groundwater strikes were encountered during the investigation works and no groundwater was recorded during the subsequent monitoring visit. It is noted that isolated pockets of groundwater may be perched within the Made Ground, which will have no impact to the wider hydrogeological environment, but should be considered within the temporary works strategy to ensure stability.
- 4.7. Interpretative geotechnical parameters and outline temporary works information is provided, including an indicative construction programme.
- 4.8. The BIA states that the proposed basement will be formed by reinforced concrete underpins below the existing masonry walls. They will be constructed using the traditional method of

underpinning in a hit and miss sequence. The underpins will be connected to the reinforced concrete basement slab and new ground floor slab, which act as lateral props to the underpins.

- 4.9. An outline construction sequence and temporary works proposal are included in the Appendix E of the BIA. The proposal has considered temporary and permanent loading conditions. It is noted that the appointed contractor will be responsible for the design of the temporary supports, which will be required during the underpinning works.
- 4.10. As part of the slope stability screening assessment in Section 3.2.1 of the Ground Investigation Report, it is stated there is no evidence of shrink-swell subsidence effects on site, but the London Clay Formation is expected to be of medium to high volume change potential. The architectural drawings indicate two palm trees to the rear garden will be removed. The revised submissions confirm that the removal of the trees will not impact the neighbouring properties' shallow foundations.
- 4.11. It is accepted that the proposed foundations should not be impacted by shrink-swell movements and that heave protection will be incorporated into the basement slab design.
- 4.12. A ground movement assessment has been undertaken which identifies a maximum of Burland Scale Category 1 (Very Slight) damage to adjacent properties. It is accepted that, considering the proposed depth, scale and construction methodology, the predicted movements are within the range anticipated. In the revised submissions, the assessment states the impact to 108 Goldhurst Terrace itself (which contains neighbouring apartments above the subject site) will be Negligible.
- 4.13. The BIA indicates very small movements impacting the highway and utilities are stated to be not impacted. Asset protection criteria should be agreed with asset owners, as applicable.
- 4.14. A structural monitoring strategy is presented with associated trigger values and contingency actions, which should be adopted during the works. The trigger values presented are considered appropriate to control construction works and maintain damage impacts to neighbouring buildings (and neighbouring apartments within 108 Goldhurst Terrace) to a maximum of Category 1 (Very Slight).
- 4.15. The proposed development will not increase the impermeable site area. It is accepted that the development will not impact on the wider hydrological environment.
- 4.16. The surface water and flooding screening assessment in section 4.3 of the BIA suggests that the site is at low risk of surface water flooding. However, LBC flood mapping indicates Goldhurst Terrace was one of the streets flooded in the 1975 and 2002 flood events and the site is within the Goldhurst Local Flood Risk Zone. In accordance with the guidance, a site specific flood risk assessment (FRA) was requested.

- 4.17. In the revised submissions an FRA is presented and flood risk mitigation measures proposed. Elevated thresholds and construction levels are designed to mitigate against surface water flooding, with non-return valves, waterproofing and sump pumps incorporated to mitigate against groundwater flooding and sewer surcharging.

5.0 CONCLUSIONS

- 5.1. The authors' qualifications meet the requirements of CPG Basements.
- 5.2. The building is not listed or adjacent to listed buildings and it is not within a conservation area.
- 5.3. A site investigation confirms the site is underlain by Made Ground over Head Deposits and London Clay.
- 5.4. There will be no impact to the wider hydrogeological and hydrological environments.
- 5.5. The site is within the Goldhurst Local Flood Risk Zone. In the revised submissions, a site specific flood risk assessment is presented and flood risk mitigation measures proposed.
- 5.6. Geotechnical design parameters and an outline temporary works strategy is presented, including an indicative construction programme.
- 5.7. A ground movement assessment has been undertaken which predicts a maximum of Burland Category 1 (Very Slight) damage to adjacent properties, including neighbouring apartments within 108 Goldhurst Terrace.
- 5.8. The BIA indicates very small movements impacting the highway and utilities are stated to be not impacted. Asset protection criteria should be agreed with asset owners, as applicable
- 5.9. It is understood that 2no trees will be removed during the works. It has been confirmed that removal of the trees will not impact the neighbouring properties' shallow foundations.
- 5.10. Queries and requests for information are summarised in Appendix 2. Considering the revised submissions, the BIA meets the requirements of Camden Planning Guidance: Basements.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Stability	A ground movement assessment has been undertaken which identifies a maximum of Burland Scale Category 1 (very slight) damage to adjacent properties. The assessment should explicitly state the impact to the neighbouring apartments within 108 Goldhurst Terrace.	Closed	October 2019
2	Stability	It is understood that 2no trees will be removed during the works. It should be confirmed that removal of the trees will not impact the neighbouring properties' shallow foundations.	Open	October 2019
3	Hydrology	The site is within the Goldhurst Local Flood Risk Zone. In accordance with the guidance, a site specific flood risk assessment should be presented and flood risk mitigation measures proposed, as applicable.	Open	January 2020

Appendix 3: Supplementary Supporting Documents

None

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