

63 Goldhurst Terrace,
London, NW6 3HB

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 63 Goldhurst Terrace, London, NW6 3HB (planning reference 2016/4083/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 carried out by AND Designs Limited with supporting documents by H Fraser Consulting Ltd, Stephen Buss Environmental Consultants Ltd, Ground and Project Consultants Ltd and Dig for Victory Limited. The authors' qualifications are in accordance with requirements.
- 1.5. The AND Designs Limited BIA is considered the lead document. The BIA does not appear to have completed all the screening questions. The BIA has omitted question 13 and 14 of the land stability screening and questions 1 to 5 of the hydrology screening. The BIA should make reference to the contributing supporting document it relies upon for its assessment, and ensure there are no contradictory statements between them.
- 1.6. The BIA has confirmed that the proposed basement will be founded within London Clay. The BIA reported some seepage being noted during the investigation, but no monitoring has been undertaken which is required.
- 1.7. The site is located within the Goldhurst Local Flood Risk Zone, as delineated by LBC. Flood risk assessments have been undertaken and conclude there is no risk to the development assuming suitable mitigation measures are proposed. These should be carried forward and detailed in the lead document.
- 1.8. A geotechnical interpretive report is included in Appendix E which presents some geotechnical parameters but not all in accordance with Arup's GSD Appendix G3. Assessment shear strengths are based on hand shear vane test results and the report states that insufficient insitu testing has been undertaken. Further investigation will be required to confirm design parameters prior to construction.
- 1.9. A resident's response states that work on site is believed to have started, which is to be confirmed. If this is the case, there is no evidence to suggest that recommendations presented

in the BIA have been undertaken, e.g. additional site investigation or survey of neighbouring properties.

- 1.10. Insufficient structural design information has been provided. Retaining wall design calculations are required for the permanent works and proposed temporary propping calculations and construction sequencing to be provided to inform ground movements and damage impact assessments.
- 1.11. A ground movement assessment is required to support damage category predictions. This should be site specific and consider imposed loading by adjacent structures / Party Walls.
- 1.12. It is requested that the site location is shown on the maps / figures to support answers given in the screening questions.
- 1.13. All screening questions with a 'Yes' answer should be carried forward to scoping and if necessary, mitigation proposed. This has not been undertaken for all questions and is required.
- 1.14. Mitigation measures are to be discussed, outlining the proposed mitigation, effects of said mitigation and any residual risks.
- 1.15. It is accepted that the surrounding slopes to the development site are stable.
- 1.16. Queries and issues requiring additional information are listed in Appendix 2. Until the required information is provided the criteria within CPG4 and DP27 have not been met.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 28 September 2016 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 63 Goldhurst Terrace, London, NW6 3HB, planning reference 2016/4083/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 (CPG) 4: Basements and Lightwells.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.

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 front and rear lightwells."*

The Audit Instruction also confirmed 63 Goldhurst Terrace did not involve, nor was a neighbour to, listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal on 26 October 2016 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (ref 15-139) dated 24 June 2015 issued by AND Designs Limited.
- Basement Impact Assessment: Groundwater (ref 30161R1D1) dated 15 September 2016 issued by H Fraser Consulting Ltd.
- Addendum Report on Ground Movements dated September 2016 issued by Ground and Project Consultants Ltd.
- Screening and Scoping Basement Impact Assessment (ref 2015-007-004-002) issued by Stephen Buss Environmental Consultants Ltd.
- Planning Application Drawings issued by Dig for Victory comprising:
 - Location Plan
 - Existing Plans and Sections (Dwg E-01)
 - Proposed Plans (Dwg P-01)
 - Proposed Structural Details (Dwg 4491-01 to 03)
- Method Statement dated 07 September 2016 issued by Dig for Victory Limited.
- Planning Comments and Responses.

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?	No	
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	See Audit paragraph 4.4.
Are suitable plan/maps included?	Yes	See BIA Report text and Appendix A.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	See Audit paragraph 4.8.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	See Audit paragraph 4.5.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	See BIA Section 2 and separate report by H Fraser Consulting.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	See Audit paragraph 4.5.
Is a conceptual model presented?	No	See Audit paragraph 4.8.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	See Audit paragraph 4.5.
Hydrogeology Scoping Provided?	No	See Audit paragraph 4.14.

Item	Yes/No/NA	Comment
Is scoping consistent with screening outcome?		
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	See Audit paragraph 4.5.
Is factual ground investigation data provided?	Yes	See BIA Appendix E.
Is monitoring data presented?	No	See Audit paragraph 4.6.
Is the ground investigation informed by a desk study?	Yes	See BIA Section 5 and Appendix E.
Has a site walkover been undertaken?	No	Not referenced.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	See BIA Section 10.
Is a geotechnical interpretation presented?	Yes	Not in accordance with GSD Appendix G3 and makes assumptions due to lack of suitable test data.
Does the geotechnical interpretation include information on retaining wall design?	No	See Audit paragraph 4.8 / 4.12.
Are reports on other investigations required by screening and scoping presented?	N/A	None identified.
Are the baseline conditions described, based on the GSD?	No	See Audit Section 4.
Do the baseline conditions consider adjacent or nearby basements?	Yes	See BIA Section 10.
Is an Impact Assessment provided?	Yes	See BIA Section 10.
Are estimates of ground movement and structural impact presented?	No	See Audit paragraph 4.13.

Item	Yes/No/NA	Comment
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	No	See Audit paragraph 4.13.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	See Audit Section 4.
Has the need for monitoring during construction been considered?	Yes	See BIA Section 10. However, insufficient detail.
Have the residual (after mitigation) impacts been clearly identified?	No	See Audit paragraph 4.16.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	See Audit Section 4.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	Not demonstrated. Comments made in various supporting documents to be assessed and presented in the lead document.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	See Audit Section 4.
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	Yes	However, no basis for assessment. Suitable GMA, geotech parameters and mitigation proposals to be presented.
Are non-technical summaries provided?	No	Non-technical summaries have not been included.

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out by AND Designs Limited with supporting documents by H Fraser Consulting Ltd, Stephen Buss Environmental Consultants Ltd, Ground and Project Consultants Ltd and Dig for Victory Limited. The authors' qualifications are in accordance with requirements.
- 4.2. The AND Designs Limited BIA is considered the lead document. However, presentation of the documents does not clearly answer the requirements of CPG4. The BIA should make reference to the contributing supporting document it relies upon for its assessment, and ensure there are no contradictory statements between them.
- 4.3. The LBC instruction to proceed with the audit confirmed that the basement proposal did not involve a listed building and is not adjacent to a listed building.
- 4.4. The BIA confirms the proposal to comprise construction of single storey basement beneath the entire footprint of the ground floor of the property including lightwells to the front and rear of the property. The BIA confirms that both neighbours have completed the construction of similar basements.
- 4.5. It is noted that only partial screening has been completed within the BIA. Questions 13 and 14 of the Land Stability screening and questions 1 to 5 of the Hydrology screening have been omitted. The BIA needs to include the full set of screening questions along with appropriate scoping for any identified impacts.
- 4.6. The BIA confirmed the basement is to be founded within London Clay although a layer of Made Ground is present to 0.9m below ground level. The Dig for Victory ground investigation report states that groundwater was not encountered during the investigation, however, a slight seepage was noted at 2.6m below ground level. No subsequent monitoring data is presented, which is required to inform construction temporary works design and mitigations.
- 4.7. A Geotechnical Interpretive Report (GIR) has been included within BIA Appendix E which discusses the results of the investigation comprising a single 15m borehole to the rear of the property. It is noted that undrained shear strength has been determined from the results of hand shear vane tests which have not been corrected for plasticity or discussed in terms of appropriate design strengths. The BIA Section 8 states that additional site investigation should be completed to obtain detailed design parameters and that shear strengths should be confirmed during construction with a hand shear vane.
- 4.8. It is noted that the GIR included in BIA Appendix E provides a table of parameters for London Clay only and does not include stiffness parameters as required for settlement and retaining

wall calculations. The conceptual model should include parameters for all strata likely to be encountered during the works as per guidance in Arup GSD Appendix G3.

- 4.9. It is stated in one of the consultations responses that construction of the proposed basement has already started. If this is the case, there is no evidence to suggest that recommendations presented in the BIA have been undertaken, e.g. additional site investigation or survey of neighbouring properties.
- 4.10. The BIA includes relevant figure extracts from the Arup GSD with the report text at each relevant section and as figures in Appendix A. However, the site is not shown on the maps which would be useful to support the screening responses.
- 4.11. The BIA discusses the impact of the proposals and identifies the need for survey and monitoring at the start of the works along with stating that the works will need to be undertaken under the Party Walls Act. Details of the monitoring proposed should be presented.
- 4.12. Insufficient structural design information has been provided. Retaining wall design calculations are required for the permanent works and proposed temporary propping calculations and construction sequencing should be provided to inform ground movements and damage impact assessments.
- 4.13. BIA Section 10 states the damage category will be slight, 2-5mm cracking. However, there is no justification for this recommendation. The BIA does not include a ground movement assessment (GMA) which is required to justify the damage category assessment. Under CPG4 damage impacts of Category 1 to 2 ('Very Slight to Slight') must be accompanied with suitable mitigation measures to reduce the impact to Category 0 ('Negligible') where practicable. The GMA should be site specific, identify a zone of influence of the proposed development, identify the geotechnical parameters adopted for assessment, discuss the method of assessment and consider the loading and structural characteristics of each structure within the zone of influence.
- 4.14. Question 4 of the hydrogeology screening identified a 'yes' answer to there being a change on the proportion of hard surfaced/paved area, but this has not been carried through to scoping. The BIA needs to demonstrate that there is no impact to the wider hydrological environment.
- 4.15. The site is located within the Goldhurst Local Flood Risk Zone, as delineated by LBC. Flood risk assessments have been undertaken and conclude there is no risk to the development assuming suitable mitigation measures are proposed. These mitigation proposals should be carried forward and detailed in the lead document.
- 4.16. Outline mitigation measures are discussed at the relevant points within the BIA scoping and impact assessment. However, the BIA does not discuss the effects of any mitigation proposed or any residual risks after mitigation has been implemented.

- 4.17. It is accepted that there are no slope stability concerns regarding the proposed development.

5.0 CONCLUSIONS

- 5.1. The authors' qualifications are in accordance with requirements.
- 5.2. The AND Designs Limited BIA is considered the lead document. The BIA does not appear to have completed all the screening questions. The BIA should make reference to the contributing supporting document it relies upon for its assessment, and ensure there are no contradictory statements between them.
- 5.3. The BIA has confirmed that the proposed basement will be founded within London Clay. The BIA reported some seepage being noted during the investigation, but no monitoring has been undertaken which is required to inform construction temporary works design and mitigations.
- 5.4. The site is located within the Goldhurst Local Flood Risk Zone, as delineated by LBC. Flood risk assessments have been undertaken and conclude there is no risk to the development assuming suitable mitigation measures are proposed. These should be carried forward and detailed in the lead document.
- 5.5. A geotechnical interpretive report presents some geotechnical parameters but not all in accordance with Arup's GSD Appendix G3. The report states that insufficient insitu testing has been undertaken. Further investigation will be required to confirm design parameters prior to construction.
- 5.6. A resident's response states that work on site is believed to have started, which is to be confirmed. If this is the case, there is no evidence to suggest that recommendations presented in the BIA have been undertaken, e.g. additional site investigation or survey of neighbouring properties.
- 5.7. Insufficient structural design information has been provided. Retaining wall design calculations are required for the permanent works and proposed temporary propping calculations and construction sequencing to be provided to prove ground movements and damage impact assessments.
- 5.8. A ground movement assessment is required to support damage category predictions. This should be site specific and consider imposed loading by adjacent structures / Party Walls.
- 5.9. The site location should be shown on the figures to support answers given in the screening questions.
- 5.10. All screening questions with a 'Yes' answer should be carried forward to scoping and if necessary, mitigation stages. It is noted that this is not the case for some answers.

- 5.11. Mitigation measures are to be discussed, outlining the proposed mitigation, effects of said mitigation and any residual risks.
- 5.12. It is accepted that the surrounding slopes to the development site are stable.
- 5.13. Queries and issues requiring additional information are listed in Appendix 2. Until the required information is provided the criteria within CPG4 and DP27 have not been met.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Wilans	Flat 3, 44 Goldhurst Terrace	29/09/2016	Believes that work has already started at the property	To be confirmed

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	Incomplete screening	Open – The lead BIA to be resubmitted to include all screening questions, appropriate scoping, impact assessments and mitigation, where required. The supporting documents should be referenced.	
2	Groundwater	Perched groundwater identified but not monitored	Open – further monitoring required to inform temporary/permanent works designs/mitigation.	
3	Land stability	BIA identifies further site investigation required to confirm design / assessment parameters	Open – further insitu testing required prior to construction.	
4	Land Stability	Geotechnical parameters and conceptual model incomplete.	Open – BIA to include conceptual model / geotechnical model as per requirements of Arup GSD Appendix G3.	
5	Land Stability	Incomplete permanent and temporary works design information.	Open – BIA to present further design information which should include retaining wall design and site specific temporary works considerations.	
6	Land Stability	No ground movement assessment (GMA)	Open - GMA to be undertaken to determine damage category and to be included within BIA	
7	BIA	Site location not shown on figures	Open – It is advised that the site location be shown on all figures	
8	Land stability	Residual mitigation risks not presented	Open – BIA to discuss all relevant mitigation, the impact of the mitigation and any residual risks	
9	Hydrology	Mitigating flood risk	Open – mitigation measures discussed in supporting documents should be presented and assessed in the BIA.	

Appendix 3: Supplementary Supporting Documents

None

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