

21 Aberdare Gardens  
London NW6 3AJ

Basement Impact Assessment  
Audit

For

London Borough of Camden

Project Number: 12066-78  
Revision: D2

June 2016

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### Document Details

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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 21 Aberdare Gardens NW6 3AJ (planning reference 2015/0847/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 comprises a number of documents; all have been prepared by firms of engineering consultants using individuals who possess suitable qualifications.
- 1.5. The original BIA submission from 2015 was considered incomplete. Additional documents as listed in section 2.7 were issued in April 2016. These documents are assumed to supersede the 2015 versions.
- 1.6. A site specific Hydrology Screening and Scoping assessment in accordance with CPG4 has been provided needs to be confirmed.
- 1.7. The soil investigation data is limited to a single borehole record; no interpretative data for the design of the walls or slab were contained in the BIA. Furthermore no desk study has been indicated.
- 1.8. No trial pits to confirm the depth of foundations for either the party wall or the adjacent semi-detached structure have been carried out.
- 1.9. The BIA has confirmed that the proposed basement will be founded within the London Clay stratum; however the depth of the basement requires confirmation.
- 1.10. It is possible that perched groundwater will be encountered during basement foundation excavation. Proposals for temporary dewatering during the construction stage should be submitted.
- 1.11. No detailed construction proposals are included. Drawings within the 2015 BIA indicate traditional reinforced concrete walls formed by underpinning however no sequence of construction or description of temporary propping requirements are included.

- 1.12. No structural calculations were presented for review. Indicative structural designs are required to demonstrate the reinforced concrete retaining walls are capable of supporting loads from the excavations and adjacent structures. Similarly, the design of the slab to accommodate uplift forces should be clarified. Assumptions with respect to soil and groundwater should be clearly stated.
- 1.13. The ground movement assessment is based upon recommendations of good practice. A site specific estimation is required with the resultant building damaged assessed using recognised methods. Estimates of ground movement should include heave, settlement and horizontal movements.
- 1.14. It is accepted that the surrounding slopes to the development site are stable.
- 1.15. It is accepted that the development will not impact on the wider hydrogeology of the area and is not in an area subject to flooding.
- 1.16. Queries and requests for further information or clarifications arising out of this audit are presented in Appendix 2.

## 2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 06 November 2015 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 21 Aberdare Gardens, London NW6 3AJ, planning reference 2015/0847/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; and,
  - 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 level including front and rear lightwells to ground floor residential flat (Class C3).*"
- The Audit Instruction also confirmed no local listed buildings are present.
- 2.6. CampbellReith accessed LBC's Planning Portal on 02 December 2015 and gained access to the following relevant documents for audit purposes:

- 21 AG Basement Impact Assessment June 15 part 1 of 4 (2) revised (Basement Structural Method Statement by AND Designs Ltd)
- 21 AG Basement Impact Assessment June 15 part 2 of 4 (2) revised (Untitled – continuation of above document?)
- 21 AG Basement Impact Assessment June 15 part 3 of 4 (2) revised (Screening and Scoping BIA by SBEC Ltd)
- 21 AG Basement Impact Assessment June 15 part 4 of 4 (2) revised (Factual Report by Chelmer Site Investigations)
- Proposed Basement Details sheet 1 of 2 AND Designs 01-P1
- Proposed Basement Details sheet 2 of 2 AND Designs 01-P1
- Proposed Floor Plans and Elevations Dig for Victory

2.7. Following queries raised in the D1 audit, a new BIA was issued for review on 28 April 2016 and CampbellReith was instructed to undertake a revised audit on 17 May 2016. It is understood these documents replace the BIA indicated above.

- Basement Impact Assessment: Land Stability dated March 2016 by Ground and Project Consultants Ltd
- Supplementary Flood Risk Assessment dated April 2016 by Kaya Consulting Ltd
- Basement Impact Assessment: Groundwater dated April 2016 by H. Fraser Consulting
- Updated floor plans and Elevations rev A by Dig for Victory

These documents form the basis of the June 2016 review.

### 3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	All authors noted as qualified in accordance with recommendations.
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?	No	No details of construction methodology or temporary works included
Are suitable plan/maps included?	Yes	Dig for Victory drawings and BIA location plans
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	Yes BIA indicates no significant change in levels across the site.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Land Stability Section 3
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Groundwater Section 3
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	Not included
Is a conceptual model presented?	Yes	BIA Land Stability Section 6
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Land Stability Section 7
Hydrogeology Scoping Provided?	Yes	BIA Groundwater Section 4



Item	Yes/No/NA	Comment
Is scoping consistent with screening outcome		
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	Not included
Is factual ground investigation data provided?	Yes	Chelmer borehole log supported by BGS data base for local logs.
Is monitoring data presented?	Yes	Groundwater monitoring proposed
Is the ground investigation informed by a desk study?	No	None indicated
Has a site walkover been undertaken?	No	Not known.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	BIA indicates no adjacent basements present
Is a geotechnical interpretation presented?	No	BIA Land Stability Section 4
Does the geotechnical interpretation include information on retaining wall design?	No	
Are reports on other investigations required by screening and scoping presented?	Yes	Flood Risk Assessment included.
Are baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	No	No basements noted.
Is an Impact Assessment provided?	Yes	BIA Groundwater Section 5 and Land Stability Section 7
Are estimates of ground movement and structural impact presented?	No	No estimate of ground movement in March 2016 BIA . Original BIA advises maximum cracking anticipated as hairline.

Item	Yes/No/NA	Comment
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	BIA Groundwater Section 5 and Land Stability Section 7
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	BIA Land stability Sections 7 and 8
Has the need for monitoring during construction been considered?	Yes	Not included in March 2016 but in section 10 of AND Designs 2015 document.
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?	No	No specific GMA submitted no calculations. Depth of basement unclear.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Flood Risk Assessment
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	No indication of movement of adjacent structures considered
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	Yes	Not contained in March 2016 BIA. Previously indicated in 2015 BIA based upon qualitative appraisal. Further clarification required.
Are non-technical summaries provided?	Yes	

## 4.0 DISCUSSION

- 4.1. The 2015 Basement Impact Assessment (BIA) and the Screening and Scoping Report were previously subject to an audit by CampbellReith. In response to that audit, additional documents were produced in March 2016 (as listed in section 2.7). We would request for clarity a schedule confirming which documents remain valid.
- 4.2. The authors of the original 2015 BIA and the 2016 BIAs for Groundwater and Land Stability have suitable qualifications in accordance with the requirements of CPG4.
- 4.3. The Food Risk Assessment carried out by Kaya Consulting Ltd, does not specifically contain a Hydrology Screening and Scoping section, and make as reference to the previous AND Designs Report. The Hydrology Screening was contained in a Stephen Buss Environmental Consulting Report which may no longer be project specific, and its status is subject to confirmation.
- 4.4. The Construction Method Statement has been prepared by a Contractor 'Dig for Victory Ltd' with experience in local basement construction.
- 4.5. Part 2 of the 2015 BIA indicated the proposed basement consists of a single storey reinforced concrete box formed by traditional underpinning to the party and boundary walls. The documents do not categorically state the depth of the basement or any construction sequence.
- 4.6. A borehole was completed in 2014 which indicated 0.90m of Made Ground over London Clay. The London Clay is described as firm becoming stiff from around 1.40m bgl. No laboratory testing, monitoring or interpretation of the data are contained within the BIA.
- 4.7. No trial pits to determine foundations to either the party wall or the adjacent semi-detached property have been carried out. These should be undertaken or reasons for omitting foundation investigations addressed in the BIA.
- 4.8. As noted above, no calculations for the basement constructions are contained in the documents; it is therefore unclear as to the design parameters adopted for the basement box. Two separate design cases for the basement walls need to be considered i.e. the party and boundary walls. The potential for the adjacent building to surcharge the retaining wall requires consideration within the structural design. The design of the slab to cater for hydrostatic and heave forces requires clarification.
- 4.9. As the basement is formed in the London Clay, significant groundwater seepage is not expected into the excavations. However, the borehole supplied indicated 0.90m of Made Ground above the clay which could contain perched water. Allowance should be made for temporary dewatering during construction.

- 4.10. The BIA contains no specific calculation of horizontal or vertical movements for the basement walls. Within the 2015 BIA the estimation of damage to adjoining buildings is given as 'slight' i.e. Burland Category 2 and cracks <5mm. This should be updated in accordance with CPG4 which requires mitigation measures to be adopted.
- 4.11. It is accepted that there are no slope stability concerns regarding the proposed development.

## 5.0 CONCLUSIONS

- 5.1. The documents comprising BIA have been carried out by firms of engineering consultants using individuals who possess suitable qualifications.
- 5.2. Original BIAs have been updated and replaced. Confirmation of valid documents is required. Additionally it is unclear if a site specific Hydrology Screening has been carried out
- 5.3. The soil investigation data is limited to a single borehole record; no interpretative data for the design of the walls or slab were contained in the BIA. No desk study has been submitted.
- 5.4. The BIA has confirmed that the proposed basement will be founded within the London Clay stratum; however the depth of the basement requires confirmation.
- 5.5. It is possible that perched groundwater will be encountered during basement foundation excavation. Proposals for temporary dewatering should be submitted.
- 5.6. It is suggested the form of construction will be traditional reinforced concrete walls formed in an underpinning sequence. No indication of the construction sequence or temporary propping is provided.
- 5.7. No structural calculations were presented for review. Indicative structural designs are required to demonstrate the reinforced concrete retaining walls are capable of supporting loads from the excavations and adjacent structures. Similarly, the design of the slab to accommodate uplift forces should be clarified. Assumptions with respect to soil and groundwater should be clearly stated.
- 5.8. The ground movement assessment is based upon recommendations of good practice. A site specific estimation of movement is required with the resultant building damaged assessed using recognised methods. Estimates of ground movement should include heave, settlement and horizontal movements.
- 5.9. It is accepted that the surrounding slopes to the development site are stable.
- 5.10. It is accepted that the development will not impact on the wider hydrogeology of the area.

## **Appendix 1: Residents' Consultation Comments**

None

## Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	General	Please provide schedule of all relevant documents to be considered in audit	Open	
2	Stability	Please confirm depth/level of proposed basement	Open	
3	Stability	Indicative structural calculations for retaining wall and basement slab required	Open	
4	Hydrology	Please provide site specific Hydrology screening	Open	
5	Stability	Site specific ground movement and building damage assessment be carried out to suit ground conditions and actual retaining wall	open	
6	Stability	Please provide detailed plan and section of temporary propping	Open	
7	Stability	Please confirm if foundation trial pits are proposed and justification if they are to be omitted.	Open	



### **Appendix 3: Supplementary Supporting Documents**

None

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