

Vine House, London NW3 1AB

Basement Impact Assessment  
Audit

For  
London Borough of Camden

Project Number: 13398-12  
Revision: D1

May 2020

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## Document History and Status

Revision	Date	Purpose/Status	File Ref	Author	Check	Review
D1	1 May 2020	Comment	KBemb13398-12-010520-D1 Vine House.doc	KB	EMB	EMB

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## Document Details

Last saved	01/05/2020 17:00
Path	KBemb13398-12-010520-D1 Vine House.doc
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Project Number	13398-12
Project Name	Vine House, London NW3 1AB
Planning Reference	2020/0601/P

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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 Vine House, London NW3 1AB (planning reference 2020/0601/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 carried out in two parts; the hydrogeology, land stability and ground movement assessments were undertaken by Maund Geo-Consulting and the hydrology assessment and structural appraisal were undertaken by Croft Structural Engineers. The individuals who completed each part of the BIA are considered to hold suitable qualifications as required by CPG4.
- 1.5. It is accepted that the surrounding slopes to the development site are stable.
- 1.6. The impact of removing a Magnolia tree should be confirmed.
- 1.7. It is accepted that the proposed basement will have no adverse impact on the wider hydrology or hydrogeology of the area.
- 1.8. Further information is required to support the conclusions of the Ground Movement Assessment and associated Damage Category, and assessment of the Grade II listed host building is required.
- 1.9. Further clarification of the temporary works sequence in the boot room/greenhouse area is required, as well as clarification of how stability will be maintained in excavations within the Bagshot Formation sand.
- 1.10. A movement monitoring strategy during excavation and construction is presented and should be revised to include monitoring of the Grade II listed host property. Trigger levels are suggested and final values should be agreed as part of the party wall award.
- 1.11. A number of queries have been raised and are summarised in Appendix 2. It cannot currently be confirmed that the proposal adheres to the requirements of the CPG Basements.

## 2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 30 March 2020 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for Vine House, London NW3 1AB.
- 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 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 to extend the current basement to match footprint of ground floor"*.

The Audit Instruction also confirmed Vine House involved, or was a neighbour to, listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal on 27 March 2020 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment (Maund BIA), Maund Geo-Consulting, ref. MGC-BIA-19-34-V3, dated 23 March 2020.
- Basement Impact Assessment (Croft BIA), Croft Structural Engineers, ref. 191025, dated 11 December 2019.
- Flood Risk Assessment (FRA), Croft Structural Engineers, ref. 191025, dated 12 December 2019.
- Existing Floor Plans drawing by Hertford Planning Service, reference 13441-S002, dated 26 June 2018.
- Proposed Basement Floor Plan & Section drawing by Hertford Planning Service, reference 13441-P009-C, dated 3 February 2020.
- Heritage Statement, Archangel Heritage, ref 0347, dated January 2020.
- Arboricultural Impact Assessment (AIA), Tree Sense, ref. GOS\_VHHS\_AIA\_001, dated 21 June 2019.
- Addendum to Arboricultural Impact Assessment, Tree Sense, ref. GOS\_VHHS\_AIA\_001\_ADD, dated 18 December 2019.

### 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	
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	
Is a conceptual model presented?	Yes	
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	

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	
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	Yes	Two rounds of groundwater monitoring carried out.
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	No	
Is a geotechnical interpretation presented?	Yes	
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 5.3 of the Maund BIA.
Are reports on other investigations required by screening and scoping presented?	Yes	Flood Risk Assessment has been presented.
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	
Are estimates of ground movement and structural impact presented?	Yes	Only vertical movements from PDisp analysis presented. No assessment of host (listed) building presented.



Item	Yes/No/NA	Comment
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	No	Further assessment required
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	
Has the need for monitoring during construction been considered?	Yes	Croft BIA.
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	Insufficient data to support conclusions of ground movement assessment and damage categories.
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?	No	Further information required
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	However insufficient evidence provided to support this.
Are non-technical summaries provided?	Yes	

## 4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out in two parts; the hydrogeology, land stability and ground movement assessments were undertaken by Maund Geo-Consulting and the hydrology assessment and structural appraisal were undertaken by Croft Structural Engineers. The individuals who completed each part of the BIA are considered to hold suitable qualifications as required by CPG4.
- 4.2. The BIAs identify that the property is a Grade II listed building. The property is also within the Hampstead Conservation Area.
- 4.3. The proposed development comprises the extension of an existing basement to occupy the whole footprint of the existing building. The maximum excavation depth is given as 3.50m.
- 4.4. It is accepted that there are no slope stability concerns regarding the proposed development.
- 4.5. The existing and proposed drawings for the scheme indicate that the single storey boot room and greenhouse extending from the east side of the side of the property will be widened as part of the development, with the basement development underlying the footprint of the whole building as well as the widened boot room and greenhouse. This is not discussed in either BIA but the Arboricultural Impact Assessment (AIA) suggests this extension has already been secured under a separate planning application, granted on 17 October 2019.
- 4.6. A site investigation was carried out at the site and is presented in the Maund BIA. Ground conditions comprise Made Ground to a maximum depth of 2.10m, below which lies Bagshot Formation to at least 8m depth.
- 4.7. The site is underlain by a Secondary A Aquifer within the Bagshot Formation soils. Groundwater was not encountered during the site investigation, or either of the two monitoring visits in a standpipe installed to 5m below ground level. As such it is accepted that the proposed basement will not adversely impact the hydrogeology of the area.
- 4.8. The site is identified as being in a critical drainage area and a Flood Risk Assessment (FRA) has been undertaken. The FRA identifies a low to negligible risk of flooding at the property from rivers and seas, or from surface water. The building will be formed within the footprint of the existing and consented building, therefore it will not have any impact on the existing drainage network. As such it is accepted that the development will have no adverse impact on the hydrology of the area.
- 4.9. The Maund BIA identifies three trees that need to be removed, based on the recommendations of the arboricultural survey. The impact assessment regarding these trees requires further

consideration, particularly regarding the identified Magnolia, which is located in the centre of the widened boot room and greenhouse area.

- 4.10. Soil parameters are derived from the site investigation. The design lines shown on Figures 5.1 and 5.2 of the Maund BIA are not supported by the SPT data, where a distinct reduction in SPT N-value is recorded below 6m depth. The blue dashed line indicating excavation depth lies at 3m depth, whereas the maximum excavation depth has been identified as 3.5m below ground level. Table 5.3 indicates an effective angle of shearing resistance of 30° at a depth of 3.5m, however in the following Section 6.2 this angle is taken as 28° at 3.5m depth.
- 4.11. The soil parameters within the text of the report assume a granular material, as indicated in the SI. The structural calculations presented in Appendix A of the Croft BIA use different parameters, however it is noted that the parameters used in these structural calculations are more conservative than those identified in the BIA texts.
- 4.12. Section 6 of the Maund BIA presents a ground movement assessment. The net loadings presented in Table 6.1 allow for the removal of the 3.5m depth of soil, which equates to 60kPa. It is not clear whether the load from the concrete underpins is then applied to the net value, or whether this had already been accounted for in the wall loads provided by Croft. Further clarification of the loading and geometry used in the PDisp input model is required. It is noted that, while the ground model has been compiled for the granular soils encountered, the PDisp analysis has been undertaken assuming a clay material.
- 4.13. The Ground Movement Assessment (GMA) presented in the Maund BIA does not include any data or calculations to support the output presented in Figures 10.1 and 10.2. This is required to support the conclusions of the GMA and the identified damage category for the neighbouring structure. Additionally, the construction sequence indicates mass excavation prior to the casting of the underpins which is at odds with the structural BIA (notwithstanding the comment below). This should be clarified.
- 4.14. Significant settlements are predicted in the BIA and a building damage assessment should also be carried out on the Grade II listed host building, to confirm an acceptable level of building damage.
- 4.15. Appendix D of the Croft BIA presents a temporary works sequence which involves propping the underpins against a central mound of soil as they are excavated. Appendix C of the Croft BIA presents a drawing showing the approximate sequence of underpinning and where the central mound of soil. The boot room and greenhouse area on the east side of the property is shown to be narrow such that a central mound of soil will not remain for use in the propping. Further clarification is therefore required regarding the construction sequence in this area.

- 4.16. Furthermore, the ground through which the basement excavation will progress is identified as Bagshot Formation comprising sand. Further information regarding how stability within the sand will be maintained through the underpinning and propping work is required.
- 4.17. A monitoring strategy has been provided in the Croft BIA and identifies the need for movement monitoring along the boundary wall with the neighbouring property High Close, during excavation and construction. Monitoring of the Grade II listed host property should also be included. Trigger values for this monitoring are suggested in the Croft BIA but should be agreed as part of the Party Wall Award.

## 5.0 CONCLUSIONS

- 5.1. The Basement Impact Assessment (BIA) has been carried out in two parts; the hydrogeology, land stability and ground movement assessments were undertaken by Maund Geo-Consulting and the hydrology assessment and structural appraisal were undertaken by Croft Structural Engineers. The individuals who completed each part of the BIA are considered to hold suitable qualifications as required by CPG4.
- 5.2. The BIA has confirmed that the proposed basement will be founded within the Bagshot Formation.
- 5.3. It is accepted that the surrounding slopes to the development site are stable.
- 5.4. Assessment of the impact of removing a Magnolia tree is required.
- 5.5. It is accepted that the proposed basement will have no adverse impact on the wider hydrology or hydrogeology of the area.
- 5.6. Further information is required to support the conclusions of the Ground Movement Assessment and associated Damage Category, and assessment of the Grade II listed host building is required.
- 5.7. Further clarification of the temporary works sequence in the boot room/greenhouse area is required, as well as clarification of how stability will be maintained in excavations within the Bagshot Formation sand.
- 5.8. A movement monitoring strategy during excavation and construction is presented and should be revised to include monitoring of the Grade II listed host property. Trigger levels are suggested and final values should be agreed as part of the party wall award.
- 5.9. A number of queries have been raised and are summarised in Appendix 2. It cannot currently be confirmed that the proposal adheres to the requirements of the 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	Stability	Further consideration of the impact of removing trees is required.	Open	
2	Stability	Soil parameters should be presented consistently and should reflect the findings of the site investigation.	Open	
3	Stability	Calculations and supporting data is required to justify the conclusions of the ground movement assessment and damage category analysis.	Open	
4	Stability	Due to the Grade II listed status of the property, a damage assessment should be provided for the listed building.	Open	
5	Stability	The temporary works and construction sequence for underpinning in the boot room/greenhouse area requires clarification.  Further information regarding how stability within the sand will be maintained through the underpinning and propping work is required.	Open	



## Appendix 3: Supplementary Supporting Documents

None

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