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Ventra House, 308 Kilburn High Road
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Basement Impact Assessment
Audit

For

London Borough of Camden

Project Number: 12336-19
Revision: D1

March 2016

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Document History and Status

Revision	Date	Purpose/Status	File Ref	Author	Check	Review
D1	04/04/16	Draft	JHCagp-12336-19-040316-VentraHouse-D1.doc	JHC	AGP	AGP

Document Details

Last saved	04/03/2016 12:36
Path	JHCagp-12336-19-040316-VentraHouse-D1.doc
Author	J Chastney, BSc FGS
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Project Number	12336-19
Project Name	Ventra House, 308 Kilburn High Road
Planning Reference	2015/3297/P

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Appendix

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 Ventra House, 308 Kilburn High Road (planning reference 2015/3297/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 (BIA) 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 by a firm of engineering consultants, LMB Geosolutions Ltd. The author is a chartered geologist but no proof of expertise in flood risk (CEng / C.WEM) or land stability (CEng) has been provided as required by CPG4.

1.5. Whilst the BIA appropriately covers items required up to Stage 3 as set out within CPG4 (screening, scoping and site investigation / study stages), the BIA does not fully and appropriately discuss Stage 4 (impact assessment stage). All aspects of Stage 4 as set out in CPG4 should be discussed within the BIA.

1.6. The BIA has stated that the proposed basement will be founded within the London Clay at approximately 4.0m bgl. The BIA states that this is an assumption made due to the fact that the basement is single storey. Proposed development plans do not show basement levels. Furthermore proposed development plans contradict the development proposals in terms total basement plan area and there is a difference of 24m^2. Development plans showing exact levels and dimensions of the basement should be provided.

1.7. No Construction Method Statement (CMS) has been provided. A CMS is required to fully assess potential ground movements and to allow confirmation of a viable construction methodology. This should identify, as minimum, details of proposed foundations, a loading assessment, proposed basement construction methodology, sequence of excavations and any proposed temporary works required. The load assessment should consider surcharging from adjacent structures and highways.

1.8. An assessment of ground movements should be provided following the production of a CMS. This should estimate ground movements effecting surrounding structures and infrastructure and provide an estimate of damage (according to the Burland Scale).

1.9. Available web-based imagery indicates a suspected retaining wall associated with residential gardens along Palmerston Road to the east of the proposed development. This is not mentioned as part of the BIA. An assessment of this retaining wall (if present) should be provided.

1.10. It is recommended that investigation of neighbouring foundations is carried out. If this is not possible then a 'worst case' design scenario should be utilised.

1.11. Following production of the CMS and associated ground movement assessment, mitigation proposals should be proposed to limit damage to adjacent properties to Burland Category 1.

Proposals should be provided for movement monitoring strategy during excavation and construction.

1.12. The BIA has identified that the site is located within a 'Secondary Area' which has been affected by historical surface flooding in the past. The BIA has recommended that a flood risk assessment is undertaken which will form the basis of appropriate mitigation measures. The FRA and mitigation measures should be included alongside the BIA.

1.13. It is accepted minor surrounding slopes to the development site are stable.

1.14. Evidence of consultation with adjacent neighbours has not been provided.

1.15. Evidence of consultations with utilities providers has not been provided. Evidence of consultations with Thames Water should be undertaken should be provided alongside the BIA to clarify if existing water infrastructure will not be able to accommodate the needs of the proposed development.

1.16. It is accepted that the development will likely not impact on the wider hydrogeology of the area.

1.17. Non-Technical Summaries have not been included within the BIA.

1.18. Queries and requests for clarification or further information are summarised in Appendix 2. As a full BIA was not submitted, further queries and requests for information may be added to Appendix 2 following receipt of additionally requested documents.

2.0 INTRODUCTION

2.1. 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 Ventra House, 308 Kilburn High Road (planning reference 2015/3297/P). The basement is considered to fall within Category B as defined by the Terms of Reference.

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 "The proposed basement will comprise a single storey structure utilised as a cycle and refuge store and plant room and will extend over a relatively small proportion of the development footprint (approximately 95m^2)".

The Audit Instruction also confirmed Ventra House, 308 Kilburn High Road was not a listed building, or was a neighbour to, listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal on 15/02/16 and gained access to the following relevant documents for audit purposes:

- Assessment of Soil and Groundwater Conditions to Support a Basement Impact Assessment Report (BIA)

- Planning Application Drawings consisting of:

  Location Plan

  Existing Plans

  Proposed Plans

- Design & Access Statement

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	No CEng / C.WEM sign off for flood risk / surface waters or CEng sign of for land stability.
Is data required by Cl.233 of the GSD presented?	Yes	However no detailed construction programme provided.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	However full details of proposed basement construction methodology not provided.
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	However land stability screening has stated that the proposed basement will not significantly increase the differential depth of foundations relative to adjacent properties. This is not the case.
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	
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	

Item	Yes/No/NA	Comment
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	Yes	
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	No comment on presence or absence of nearby basements.
Is a geotechnical interpretation presented?	Yes	Provided in Appendix C.
Does the geotechnical interpretation include information on retaining wall design?	Yes	However form of potential retaining walls not considered.
Are reports on other investigations required by screening and scoping presented?	No	Flood risk assessment required.
Are baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	No	
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	No	No estimates of ground movements presented.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	

Item	Yes/No/NA	Comment
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	However not detailed thoroughly.
Has the need for monitoring during construction been considered?	Yes	However not detailed thoroughly.
Have the residual (after mitigation) impacts been clearly identified?	Yes	However not detailed thoroughly.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	No CMS or ground movement assessment provided.
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	
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	No	No assessment of ground movements and no statement mentioning anticipated Burland Category damage.
Are non-technical summaries provided?	No	

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by a firm of engineering consultants, LMB Geosolutions Ltd. The author is a chartered geologist but no proof of expertise in flood risk (CEng / C.WEM) or land stability (CEng) has been provided as required by CPG4.

4.2. The report submitted as a part of the audit instruction is titled *'Assessment of Soil and Groundwater Conditions to Support a Basement Impact Assessment'.* For the purposes of this Audit and simplicity this is referred to as a BIA.

4.3. No Construction Method Statement (CMS) or similar alternative has been prepared. It should be noted that this document is key to assessing potential ground movements and potential impact on adjacent properties. It has been noted within the BIA that '*details of the structural design and construction sequencing will be provided under separate cover within a Construction Method Statement and related documents by the Consultant Engineers*'. At the time of undertaking this audit these documents were not available.

4.4. The instruction to proceed with the audit confirmed Ventra House was not a listed building, or was a neighbour to, listed buildings. This is not confirmed as a part of any associated documents (e.g. Design & Access Statement).

4.5. The proposal description states '*The proposed basement will comprise a single storey structure utilised as a cycle and refuge store and plant room and will extend over a relatively small proportion of the development footprint (approximately 95m2)'*.

4.6. The BIA states that the proposed basement will be at approximately 4.0m bgl. However the BIA states that this is an assumption, made due to the fact that the basement is single storey. Development proposals indicating exact levels. Proposed development plans (i.e. 635.P.06 Proposed Elevations.pdf) do not show basement elevations. Furthermore proposed development plans contradict the development proposal given in the aforementioned proposal description as these state that the floor plan will be 71m^2.

4.7. The BIA contains ground investigation data in the form of one borehole log with associated laboratory testing. This has identified that the area of the lateral basement extension is underlain by Made Ground to a depth of 1.60 metres below ground level (bgl), below which lies the London Clay which has been proven to a depth of 10.00m bgl. Groundwater was not recorded during excavation of the borehole, however was recorded on a monitoring visits at a depth of 4.46m below ground floor level (approximately 0.46m below proposed basement level). Interpretation of the findings of the ground investigation presented within Appendix C of the BIA has stated groundwater *'may be reflective of rainwater run-off and leakage rather than groundwater'.*

4.8. The interpretive ground investigation report contained within Appendix C of the BIA very briefly discusses proposed basement construction methodology. The 'preferred' method stated is to utilise conventional open cut, however the document has stated that '*Made Ground >1.5m was encountered along with soft London Clay and on this basis the stability of unsupported excavations at the site should not be relied upon'*. It was also stated that '*It is possible that temporary sheet piles may be needed for basement construction'.* Ground movements surrounding basement excavations are highly dependent on methods of basement construction.

4.9. Various options for foundations are briefly discussed in the appendix of the BIA including trench fill, pad and piled foundations bearing onto the firm to stiff cohesive London Clay deposits. A CMS is required in order to clarify preferred foundation solution at the proposed development.

4.10. No mention of proven or anticipated foundations of adjacent properties has been made within the BIA or associated documents. Surcharge loading from the adjacent foundations (including loadings from the proposed development) and highways requires consideration prior to detailed design for the permanent and temporary works.

4.11. Estimates of ground movements and anticipated category of damage (on Burland scale) to adjacent properties and highways have not been provided in the BIA or supporting documents.

4.12. Brief recommendations are provided in the form of a bullet point list within the BIA for a movement monitoring strategy during excavation and construction. Monitoring proposals are not sufficiently detailed.

4.13. It is accepted that the proposed development does not impact on current rainwater discharges to the below ground surface water drainage system as low permeability London Clay deposits and cohesive Made Ground deposits underlie the proposed development.

4.14. Despite the fact there will be an increase in residential dwellings at the site (with associated increase in foul water discharge), no consultation with Thames Water to prove approval for discharge is provided.

4.15. The BIA has shown that the development will not impact on the wider hydrogeology of the area, any other watercourses, springs or the Hampstead Heath Pond chain catchment area.

4.16. The BIA has identified that the site is located within a 'Secondary Area' which has been affected by historical surface flooding in the past. The BIA has recommended that a flood risk assessment is undertaken which will form the basis of appropriate mitigation.

4.17. No significant slopes are present surrounding the site and it is accepted that there are no slope stability concerns regarding the proposed development.

5.0 CONCLUSIONS

5.1. The Basement Impact Assessment (BIA) has been carried out by a firm of engineering consultants, LMB Geosolutions Ltd. The author is a chartered geologist but no proof of expertise in flood risk (CEng / C.WEM) or land stability (CEng) has been provided as required by CPG4.

5.2. Whilst the BIA appropriately covers items required up to Stage 3 as set out within CPG4 (screening, scoping and site investigation / study stages), the BIA does not fully and appropriately discuss Stage 4 (impact assessment stage). All aspects of Stage 4 as set out in CPG4 should be discussed within the BIA.

5.3. The BIA has stated that the proposed basement will be founded within the London Clay at approximately 4.0m bgl. The BIA states that this is an assumption made due to the fact that the basement is single storey. Proposed development plans do not show basement levels. Furthermore proposed development plans contradict the development proposals in terms total basement plan area and there is a difference of 24m^2. Development plans showing exact levels and dimensions of the basement should be provided.

5.4. No Construction Method Statement (CMS) has been provided. A CMS is required to fully assess potential ground movements and to allow confirmation of a viable construction methodology. This should identify, as minimum, details of proposed foundations, a loading assessment, proposed basement construction methodology, sequence of excavations and any proposed temporary works required. The load assessment should consider surcharging from adjacent structures and highways.

5.5. An assessment of ground movements should be provided following the production of a CMS. This should estimate ground movements effecting surrounding structures and infrastructure and provide an estimate of damage (according to the Burland Scale).

5.6. Available web-based imagery indicates a suspected retaining wall associated with residential gardens along Palmerston Road to the east of the proposed development. This is not mentioned as part of the BIA. An assessment of this retaining wall (if present) should be provided.

5.7. It is recommended that investigation of neighbouring foundations is carried out. If this is not possible then a 'worst case' design scenario should be utilised.

5.8. Following production of the CMS and associated ground movement assessment, mitigation proposals should be proposed to limit damage to adjacent properties to Burland Category 1. Proposals should be provided for movement monitoring strategy during excavation and construction.

5.9. The BIA has identified that the site is located within a 'Secondary Area' which has been affected by historical surface flooding in the past. The BIA has recommended that a flood risk assessment is undertaken which will form the basis of appropriate mitigation measures. The FRA and mitigation measures should be included alongside the BIA.

5.10. It is accepted that minor surrounding slopes to the development site are stable.

5.11. Evidence of consultation with adjacent neighbours has not been provided.

5.12. Evidence of consultations with utilities providers has not been provided. Evidence of consultations with Thames Water should be undertaken should be provided alongside the BIA to clarify if existing water infrastructure will not be able to accommodate the needs of the proposed development.

5.13. It is accepted that the development will likely not impact on the wider hydrogeology of the area.

5.14. It is recommended that the queries and discrepancies identified are closed out in an updated BIA. Additional information required should cover all matters required as a part of Stage 4 (impact assessment stage) and Stage 5 (Review and Decision Making) according to CPG4. The updated BIA should also include the following:

- Construction methodology (to be included as a part of a construction method statement).
- Predicted ground movements to be confirmed for proposed construction sequence, basement configuration and nature and condition of surrounding structures and infrastructure.
- Mitigation proposals to limit potential damage to adjacent properties to Burland Category 1.
- Details of form retaining walls (permanent and temporary works) with soil, groundwater and adjacent foundation layout assumptions clearly stated.
- Evidence of consultation with Thames Water and utilities providers to seek their approval for works.
- Non-technical summaries.

Appendix 1: Resident's Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	General	Full BIA to be undertaken in accordance with CPG4.	Open	
2	Stability	Construction Method Statement to be undertaken.	Open	
3	Stability	Predicted ground movements to be confirmed for actual construction sequence, basement configuration and nature and condition of surrounding structures and infrastructure.	Open	
4	Stability	Mitigation proposals to limit potential damage to adjacent properties and infrastructure to Burland Category 1.	Open	
5	Information	Drawings clearly indicating proposed basement excavation levels.	Open	
6	Hydrology	Flood Risk Assessment to be provided.	Open	
7	BIA author qualifications	Evidence of authors' experience in flood risk and land stability as per CPG4.	Open	
8	Foul Drainage	Evidence of consultations with utilities asset owners (pertinently Thames Water).	Open	
9	Information	Non-technical summaries should be provided within the BIA.	Open	

Appendix 3: Supplementary Supporting Documents

None

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