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Basement Impact Assessment
Audit

For

London Borough of Camden

Project Number: 12985-66
Revision: D1

August 2019

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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 (BIA) submitted as part of the Planning Submission documentation for 22 Holmes Road (planning reference 2019/2823/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 audit instruction also confirmed that the proposal does not involve any listed buildings.

1.5. The Basement Impact Assessment (BIA) has been undertaken by appropriately qualified authors.

1.6. The proposed scheme comprises the demolition of the former studio building and the rear off-shoot extension and the construction of three new three storey houses with two one-storey basements.

1.7. Supporting information confirming neighbouring basement location and dimensions should be presented.

1.8. A site investigation including groundwater monitoring have been undertaken and shows the formation level can be below groundwater level. The BIA should be updated to consider the mitigation measures recommended in the structural report.

1.9. Outline permanent and temporary structural works proposals are presented.

1.10. The BIA should present a geotechnical interpretation, including parameters for retaining wall, foundation and floor slab design.

1.11. A Ground Movement Assessment (GMA) is not presented and is required as specified in Section 4.

1.12. A ground movement monitoring proposal has been included in the BIA. However, it will require updating for the GMA findings.

1.13. It is accepted the site is in an area currently at very low risk of flooding from river, sea, groundwater and surface water. However, the existing combined waste water infrastructure is

not able to accommodate the needs of this development proposal as there is the risk of sewage flooding and/or potential pollution incidents. The applicant is encouraged to liaise with Thames Water on this issue.

1.14. It is accepted there will be no impact to the wider hydrogeological environment and that the proposed basement raises no concern in relation to slope stability.

1.15. Until the additional information requested is provided, the BIA does not meet the requirements of CPG Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 25 June 2019 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 22 Holmes Road, London NW5 3AB (Reference: 2019/2823/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, 2018.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.
- Local Plan 2017: 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 *"Demolition of former studio building and existing side and rear extensions to 22 Holmes Road. Erection of 2 storey (with basement), 2 bedroom dwelling between no.22 and no.24, and 2 x 2 storey (with basement) 2 bedroom dwellings to rear of site with associated private amenity space and refuse/cycle storage. Erection of new 2 storey extension to rear of no.22."*

2.6. The audit instruction confirmed that the proposal does not involve any listed buildings.

2.7. CampbellReith accessed LBC's Planning Portal on 07 August 2019 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment (BIA) by Stantec UK Ltd and Key GeoSolutions Ltd (report ref.:67109 R1 and 19-088-R-001) dated May and April 2019 respectively.
- Basement Structural Methodology by Osborne Edwards Ltd (19088/JO), dated July 2019
- Norton Mayfield Architects Planning Application drawings including proposed and existing plans and sections.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Authors' qualifications are satisfactory.
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	Maps and plans are provided in the BIA.
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	Data sources are presented in the BIA. Justification is provided for 'No' answers.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	As above.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	As above.
Is a conceptual model presented?	Yes	
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Scoping is consistent with screening outcome.
Hydrogeology Scoping Provided?	Yes	As above.

Item	Yes/No/NA	Comment
Is scoping consistent with screening outcome?		
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	A drainage design should be presented to Thames Water.
Is factual ground investigation data provided?	Yes	Key GeoSolutions Ground Investigation Report.
Is monitoring data presented?	Yes	Section 3 of the Stantec BIA.
Is the ground investigation informed by a desk study?	Yes	Section 4, 5 and 6 of the BIA.
Has a site walkover been undertaken?	Unknown	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	However, supporting information confirming basement locations and dimensions should be submitted.
Is a geotechnical interpretation presented?	No	
Does the geotechnical interpretation include information on retaining wall design?	No	
Are reports on other investigations required by screening and scoping presented?	Yes	Osborne Edwards Basement Structural Methodology.
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	As above.
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	No	A Ground Movement Assessment (GMA) is not presented and is required.
Is the Impact Assessment appropriate to the matters identified by screening 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	BIA and Structural Report.
Has the need for monitoring during construction been considered?	Yes	Both groundwater and ground movement monitoring are proposed.
Have the residual (after mitigation) impacts been clearly identified?	Yes	The BIA states residual impacts to be negligible.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	A GMA should be produced to demonstrate the stability of the surrounding infrastructure will be maintained and any damage to nearby buildings will not exceed permissible limits.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	The scheme has the potential to increase the risk of sewage flooding and/or potential pollution incidents. A drainage system design/strategy should be presented to Thames Water.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	As above.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	However, a GMA is required to demonstrate it.
Are non-technical summaries provided?	No	However, the report is well written and easy to read.

4.0 DISCUSSION

4.1. The individuals concerned with the production of the Basement Impact Assessment (BIA) hold suitable qualifications.

4.2. The site currently contains a semi-detached three-bedroom house fronting on to Holmes Road that is distributed over three storeys with a lower ground, upper ground and first floor level. At the rear of the property there is a large single storey building that was a studio, which is connected to the house through a rear off-shoot that sits at a level between the lower and upper ground floors of the main house.

4.3. The proposed scheme comprises the demolition of the former studio building and the rear off-shoot extension, and the construction of three new three-storey houses in their place and on the remainder of the external areas. It is also proposed to build a one-storey basement roughly underneath the footprint of each of the three new houses. The erection of new 2 storey extension to the rear of No. 22 Holmes Road is also proposed.

4.4. The BIA states that two properties adjacent to the site have existing basements, both of which are deeper than the proposed development. However, supporting information confirming basement location and dimensions should be submitted.

4.5. A site investigation has been undertaken, proving Made Ground to a maximum depth of c. 0.90m bgl (c. 34.30m AOD). The London Clay Formation was intercepted underneath the Made Ground and proven to the bottom of the boreholes at 5.45m bgl. A foundation inspection pit was undertaken alongside the adjoining building, 24 Holmes Road, showing a concrete foundation at a depth of c. 0.90m bgl and bearing into London Clay.

4.6. Groundwater was not encountered during the site investigation. A rising head test was carried out and the water returned slowly, suggesting, according to the BIA, low permeability and negligible flow.

4.7. During three monitoring visits after the investigation works, groundwater was monitored at depths of c. 0.85 and 4.55m bgl. A maximum excavation depth of 3.85m (31.35m OAD) is proposed. The BIA incorrectly states that groundwater has been recorded below the proposed basement level and states that monitoring of groundwater levels during the construction phase will be enough to avoid any negative impacts from groundwater. However, the structural report by Osborne Edwards Ltd, suggests provision is made for the implementation of pumps to manage any groundwater ingress during the excavation in addition to groundwater monitoring. The BIA should be updated including consideration of such mitigation measures. It is accepted that there will be no impact to the wider hydrogeological environment.

4.8. The construction sequence proposed in the structural report indicates underpinning works will be undertaken after the demolition of the former studio and the off-shoot buildings. Underpinning is proposed along part of the flank wall of 24-26 Holmes Road, along the flank wall of 20 Holmes Road and along the western wall of the applicant's house, using a typical 'hit and miss' sequence. A contiguous piled retaining wall will be then installed inside the underpinning and along the remainder of the proposed basement perimeter. High level props will be installed at capping beam level when the excavation reaches a depth of between 0.75 and 1.50m bgl to provide support in the temporary case. It is understood that the basement slab will be supported by piled foundations.

4.9. A retaining wall is assumed to be present along the northern boundary, separating the site from Regis Road. The wall, believed be located at the back of the studio, is approximately 1m high. A system of waling beams and props connected to thrust blocks is proposed to support the wall during construction. As the proposed finished floor level along the northern boundary will increase the difference in levels to the road to c. 2.20m, the existing retaining wall will be removed in an underpinning sequence and a new, higher retaining wall will be installed. The wall will be a cantilever in the temporary condition.

4.10. The BIA does not present either a detailed ground model or geotechnical parameters for all the strata intercepted during the ground investigation and these should be provided. The geotechnical interpretation should include parameters for retaining wall, foundation and floor slab design.

4.11. The BIA states that ground movements caused by the proposed construction technique should not exceed 5mm in either horizontal or vertical directions and that possible damage to the adjacent properties would fall into Category 1 of the Burland Scale. A Ground Movement Assessment (GMA) should be presented in the BIA to justify this statement. Particular consideration should be given to the potential for cumulative impacts deriving from the excavation of two different construction techniques being adopted.

4.12. The GMA should estimate ground movements occurring to all the buildings and infrastructure (roads, retaining walls, underground utilities etc.) present within the zone of influence of the proposed basements and give a damage category as defined by Burland for the affected properties.

4.13. A movement monitoring proposal has been included in Section 5.3 of Key GeoSolutions Ltd BIA describing target locations and frequency of monitoring, with amber trigger levels suggested to be between 5 and 10mm in both the horizontal and the vertical direction. This will require updating for the GMA findings.

4.14. It is accepted the site is in an area currently at very low risk of flooding from river, sea, groundwater and surface water. The BIA states that there will not be any change in the hardstanding area proportion (100%) and that, pending confirmation from the final drainage plans, the existing drainage arrangements will be kept for the proposed development. However, in a response letter, Thames Water states that the existing combined waste water infrastructure is not able to accommodate the needs of this development proposal as there is the risk of sewage flooding and/or pollution incidents. The applicant is encouraged to liaise with Thames Water on this issue.

4.15. It is accepted the proposed basement raises no concern in relation to slope stability.

5.0 CONCLUSIONS

5.1. The Basement Impact Assessment (BIA) has been undertaken by appropriately qualified authors.

5.2. The proposed scheme comprises the demolition of the former studio building and the rear off-shoot extension and the construction of three new three storey houses in their place and on the remainder of the external areas with two one storey basements.

5.3. Supporting information confirming basement location and dimensions should be presented.

5.4. A site investigation including groundwater monitoring have been undertaken and shows the formation level can be below groundwater level. The BIA should be updated including consideration for mitigation measures reported in the structural report.

5.5. Outline permanent and temporary structural works proposals are presented.

5.6. The BIA should present a geotechnical interpretation, including parameters for retaining wall, foundation and floor slab design.

5.7. A Ground Movement Assessment is not presented and is required as specified in Section 4.

5.8. A movement monitoring proposal has been included in the BIA. However, it will require updating for the GMA findings.

5.9. It is accepted the site is in an area currently at very low risk of flooding from river, sea, groundwater and surface water. However, the existing combined waste water infrastructure is not able to accommodate the needs of this development proposal as there is the risk of sewage flooding and/or potential pollution incidents. The applicant is encouraged to liaise with Thames Water on this issue.

5.10. It is accepted there will be no impact to the wider hydrogeological environment and that the proposed basement raises no concern in relation to slope stability.

5.11. Until the additional information requested is provided, the BIA does not meet the requirements of CPG Basements.

Appendix 1: Residents' Consultation Comment

None

Appendix 2: Audit Query Tracker

Query No	Subject	Query	Status/Response	Date closed out
1	Stability	Supporting information confirming neighbouring basements locations and dimensions should be provided.	Open – see Section 4.4.	
2	Stability	The BIA should be updated including consideration for mitigation measures against groundwater ingress into the excavations, as described in the structural report.	Open – see Section 4.7.	
3	Stability	The BIA should include a detailed ground model along with a geotechnical interpretation including geotechnical parameters for all the strata intercepted during the ground investigation.	Open – see Section 4.10.	
4	Stability	A GMA should be presented in the BIA.	Open – See Section 4.11. and 4.12.	

Appendix 3: Supplementary Supporting Documents

None

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