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Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12466-17

Revision: D1

November 2016

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Document History and Status

Revision	Date	Purpose/Status	File Ref	Author	Check	Review
D1	November 2016	Comment	GKemb12466-17-021116-3-6 Spring Place-D1.docx	GK	PIL/CC	AJM

Document Details

Last saved	02/11/2016 14:20
Path	GKemb12466-17-021116-3-6 Spring Place-D1.docx
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Project Number	12466-17
Project Name	3 – 6 Spring Place
Planning Reference	2016/5181/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 3 – 6 Spring Place, London NW5 3BA (planning reference 2016/5181/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 proposed development involves demolition of an existing two storey structure and construction of a part two storey and part six storey commercial building, above a single level of basement. A Network Rail viaduct bisects the site.

1.5. The BIA has been prepared by Heyne Tillett Steel with supporting Site Investigation and BIA documents prepared by Geotechnical and Environmental Associates Ltd. The authors' qualifications are in accordance with the requirements of CPG4.

1.6. A desk study has been presented, broadly in accordance with aspects recommended in the GSD Appendix G1.

1.7. The BIA states that the site lies directly on a designated non-aquifer, the London Clay and it is accepted that there is a very low risk of groundwater flooding at the site or impact to the wider hydrogeological environment.

1.8. The BIA states that the site is at very low risk of surface water flooding but does identify it as being within a Critical Drainage Area (Group 3-003, as determined by LBC). The site area is currently 100% impermeable and there will be no change under the proposed development. It is accepted that the site is at low risk of surface water flooding and that it is unsuitable for soakaway SUDS.

1.9. Attenuation SUDS options have not been proposed (as recommended in CPG4, Section 3.51) to reduce peak discharge flows and therefore discharge flows to combined sewers will remain at current levels. A drainage strategy, which considers implementation of attenuation SUDS, should be presented. Alternately, if considered impracticable, a statement indicating why attenuation SUDS cannot implemented should be presented.

1.10. A site investigation is presented. The exploratory works undertaken identify the London Clay as the bearing formation for the proposed foundations, underlying a varying thickness of Made Ground. Interpretative geotechnical information broadly in accordance with the GSD Appendix G3 is presented.

1.11. Limited groundwater monitoring is presented and the BIA recommends more long term monitoring to be undertaken, combined with additional site investigation, prior to construction to assess potential perched water inflows from Made Ground during construction.

1.12. Additional site investigation to identify the foundations of the Network Rail viaduct are proposed in the BIA. Assessments should be reviewed once the investigation is concluded and the impact assessment updated, as required.

1.13. The BIA includes a GMA which assesses that ground movements will be minimal and that Damage Impact to structures within the proposed development's zone of influence will be Category 0 - 1 (Negligible to Very Slight) in accordance with the Burland Scale.

1.14. Control of construction activities to mitigate ground movements, including structural calculations, sketches, construction sequencing, temporary works recommendations and an outline monitoring proposal, are presented in the BIA. The BIA acknowledges that Network Rail's exclusion zones must be adhered to and that all works affecting Network Rail assets are to be undertaken in consultation with Network Rail.

1.15. It is accepted that there are no land stability impacts related to slopes. It is accepted that there are no land or structural stability issues relating to the proposed development, assuming guidance presented within the BIA is followed, including provision of stiff propping and monitoring throughout the construction period, in accordance with best practise.

1.16. Queries and matters requiring further information or clarification are discussed in Section 4 and summarised in Appendix 2. Assuming that the works proceed in accordance with the recommendations presented, including the additional site investigation and groundwater monitoring, the criteria contained in CPG4 and DP27 have been met.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 14 October 2016 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 3 – 6 Spring Place, London NW5 3BA, Camden Reference 2016/5181/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: "Erection of a part-six and part-two storey (above single basement level) building comprising Office (Class B1(a)) at ground and upper floors; Cafe (Class A3) and flexible event space (Sui Generis) at ground floor and associated works following demolition of existing two-storey industrial (Class B2) building".

2.6. CampbellReith accessed LBC's Planning Portal on 20 October 2016 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment (ref 1399) dated September 2016 by Heyne Tillett Steel.

- Ground Investigation and Basement Impact Assessment (ref J16143) dated August 2016 by Geotechnical and Environmental Associates Ltd.
- Desk Study Report (ref 15241) dated September 2015 by Geotechnical and Environmental Associates Ltd.
- Site Location Plan, Existing Plans and Elevations, Proposed Plans and Elevations, Demolition Plans and Sections dated September 2016 by Piercy & Company.
- Comments and objections to the proposed development from local residents.

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 plans/maps included?	Yes	Desk Study
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	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	The site is situated within Critical Drainage Area Group 3-003. No attenuation SUDS proposed.
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	Yes	The BIA recommends further groundwater monitoring plus additional SI in advance of construction to confirm groundwater inflows.
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?	Yes	No adjacent basements identified. However, the proposed construction will need to respect Network Rail's exclusions zone.
Is a geotechnical interpretation presented?	Yes	
Does the geotechnical interpretation include information on retaining wall design?	Yes	
Are reports on other investigations required by screening and scoping presented?	Yes	Network Rail consultations
Are baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	They consider adjacent structures, including Network Rail Infrastructure
Is an Impact Assessment provided?	Yes	

Item	Yes/No/NA	Comment
Are estimates of ground movement and structural impact presented?	Yes	
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Temporary propping, monitoring, groundwater inflow assessments discussed. However, no attenuation SUDS proposed to mitigate surface water discharge flow.
Has the need for monitoring during construction been considered?	Yes	
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?	Yes	
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	The proposed scheme has 100% impermeable site area, as per the current site condition. The discharge flow conditions will remain the same. However, no attenuation SUDS proposed to mitigate surface water discharge flow.
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?	Yes	Damage Impact limited to Category 1 (Very Slight).
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1. The BIA has been prepared by Heyne Tillett Steel with supporting documents prepared by Geotechnical and Environmental Associates Ltd. The authors' qualifications are in accordance with the requirements of CPG4.

4.2. The site investigation undertaken identifies the London Clay as the bearing formation for the proposed foundations, underlying a varying thickness of Made Ground. Interpretative geotechnical information broadly in accordance with the GSD Appendix G3 is presented. The site investigation and BIA have been informed by a desk study broadly in accordance with the GSD Appendix G1.

4.3. The site lies directly on a designated non-aquifer, the London Clay and it is accepted that there is a very low risk of groundwater flooding at the site or impact to the wider hydrogeological environment.

4.4. The BIA states that the site is at very low risk of surface water flooding but does identify it as being within a Critical Drainage Area (Group 3-003, as determined by LBC). In line with CPG4 (Section 3.51), a drainage solution should be presented incorporating attenuation SUDS to reduce peak discharge rates. In accordance with the guidance, only where attenuation SUDS cannot be practically implemented will direct discharge to sewers be approved.

4.5. The site area is currently 100% impermeable and there will be no change under the proposed development. It is accepted that the site is at low risk of surface water flooding and that it is unsuitable for soakaway SUDS due to the underlying non-aquifer. Attenuation SUDS options have not been proposed to reduce discharge flows and therefore flows to combined sewers will remain at current levels.

4.6. A drainage strategy, which considers implementation of attenuation SUDS, should be presented. Alternately, if considered impracticable, a statement indicating why attenuation SUDS cannot be implemented should be presented.

4.7. The proposals allow for piled retaining walls to the basement, to be off-set from Party Walls, the site boundary and the Network Rail exclusion zone. Contiguous bored piles are proposed, with grouting if required to mitigate against perched shallow groundwater from within the Made Ground.

4.8. The BIA confirms that further site investigation will be undertaken to confirm groundwater conditions and assess potential inflow rates. Mitigation in the forms of sump pumping and / or use of grout between contiguous piles is proposed in the temporary case. In the permanent

case, RC liner walls will be constructed within the pile walls. Appropriate waterproofing has been allowed for, including a drained cavity between the piled walls and the liner walls.

4.9. The BIA confirms that full propping of the basement walls has been allowed for, both in the permanent and temporary conditions. Suitable analysis and structural details have been presented. A ground Movement Assessment is also presented, which confirms a Damage Impact of Category 0 to 1 (Negligible to Very Slight) to surrounding structures, in accordance with the Burland Scale. This also assumes full propping and that retaining walls will not be cantilevered at any stage in the construction process.

4.10. The GMA identifies the potential sensitive structural receivers within the zone of impact of the the proposed development, which includes neighbouring buildings and the Network Rail viaduct. The movement and damage assessment considers each structure individually and is considered to be appropriate.

4.11. Network Rail have been engaged in discussions for the proposed development, and a monitoring strategy for their assets during the construction process should be agreed prior to works starting on site. An outline monitoring scheme for the other structures is also proposed and should be agreed under the Party Wall Act, where applicable.

4.12. Additional site investigation to identify the foundations of the Network Rail viaduct are proposed in the BIA. Assessments should be reviewed once the investigation is concluded and the impact assessment updated, as required.

4.13. It is accepted that there are no land stability impacts related to slopes. It is accepted that there are no land or structural stability issues relating to the proposed development, assuming guidance presented within the BIA is followed, including provision of stiff propping and monitoring throughout the construction period, in accordance with best practise.

4.14. Queries and matters requiring further information or clarification are summarised in Appendix 2. Assuming that the works proceed in accordance with the recommendations presented, including the additional site investigation and groundwater monitoring, the criteria contained in CPG4 and DP27 have been met.

5.0 CONCLUSIONS

5.1. The authors' qualifications are in accordance with the requirements of CPG4.

5.2. A desk study has been presented, broadly in accordance with aspects recommended in the GSD Appendix G1.

5.3. A site investigation and interpretative geotechnical information broadly in accordance with the GSD Appendix G3 is presented.

5.4. It is accepted that there is a very low risk of groundwater flooding at the site or impact to the wider hydrogeological environment.

5.5. It is accepted that the site is at low risk of surface water flooding and that it is unsuitable for soakaway SUDS. A drainage strategy, which considers implementation of attenuation SUDS, should be presented. Alternately, if considered impracticable, a statement indicating why attenuation SUDS cannot implemented should be presented.

5.6. Long term groundwater monitoring, combined with additional site investigation, is recommended prior to construction to assess potential perched water inflows from Made Ground during construction.

5.7. Additional site investigation to identify the foundations of the Network Rail viaduct are proposed. Assessments should be reviewed once the investigation is concluded and the impact assessment updated, as required.

5.8. The GMA assesses that ground movements will be minimal and that Damage Impact to structures within the proposed development's zone of influence will be Category 0 - 1 (Negligible to Very Slight) in accordance with the Burland Scale.

5.9. Control of construction activities are recommended in the BIA. Network Rail's exclusion zones must be adhered to and all works affecting Network Rail assets are to be undertaken in consultation with Network Rail.

5.10. It is accepted that there are no land stability impacts related to slopes. It is accepted that there are no land or structural stability issues relating to the proposed development, assuming guidance presented within the BIA is followed in accordance with best practise.

5.11. Queries and matters requiring further information or clarification are summarised in Appendix 2. Assuming that the works proceed in accordance with the recommendations presented, the criteria contained in CPG4 and DP27 have been met.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status/Response	Date closed out
1	Groundwater	In accordance with the BIA's own recommendations, long term groundwater monitoring should be undertaken. Additional investigation to confirm inflow rates should be undertaken prior to construction.	To be agreed for Party Wall Award.	N/A
2	Surface Water Flow	A drainage strategy, which considers implementation of attenuation SUDS, should be presented. Alternately, if considered impracticable, a statement indicating why attenuation SUDS cannot implemented should be presented.	Open – to be provided.	
3	Land Stability	Control of construction activities are recommended in the BIA. Network Rail's exclusion zones must be adhered to and all works affecting Network Rail assets are to be undertaken in consultation with Network Rail.	To be agreed with Network Rail and for Party Wall Award.	N/A

Appendix 3: Supplementary Supporting Documents

None

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