CampbellReith
consulting engineers

465 – 467 Finchley Road
London NW3 6HS

Basement Impact Assessment
Audit

For

London Borough of Camden

Project Number: 12066-56

Revision: D1

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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 465 - 467 Finchley Road (planning reference 2015/2557/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 Screening and Scoping (Stage 1 and 2) was undertaken by Southern Testing Limited (STL) with the Basement Impact Assessment and Construction Method Statement prepared by Abstruct Consulting Engineers. The STL report was checked and reviewed by individuals with suitable qualifications. Additional information is required to confirm the Abstruct report author has suitable qualifications.

1.5. The BIA has confirmed that the proposed basement will be located within the London Clay and that the surrounding slopes are stable.

1.6. It is accepted that groundwater is not expected to be an issue in the London Clay, however, based on the monitoring data, groundwater ingress from perched groundwater is likely and measures such as pumping are likely to be sufficient.

1.7. It is accepted that the development will have little detrimental effect on surface water discharges to the network drainage system.

1.8. Whilst it is accepted that the site is in a low risk area with respect to surface water flooding, Finchley Road and West End Lane did flood in 2002 and more evidence is needed to support the conclusion that it is unlikely that water will enter the basement in the event of surface water flooding.

1.9. The development site does not involve a listed building nor is it in the neighbourhood of listed buildings.

1.10. The proposed basement will be excavated and constructed utilising established techniques which include underpinning.

1.11. The BIA considers settlement of the underpins (which include the party wall) and indicated that the long term settlement is expected to be negligible although estimated values and a damage category are not given. It is not clear if horizontal movements have been considered. An analysis of heave due to excavation of the basement was undertaken but this does not consider the party wall. An updated document considering the above as well as a predicted damage category is required.

1.12. The BIA does not consider the impact on the highways or utilities possibly running beneath them. Additional information is needed to demonstrate the roadways and any utilities running beneath them are not adversely affected by the development.

1.13. It is noted that the site is located on a TFL red route. It is noted that the TFL response refers to a construction management plan and require details of construction vehicle loading and unloading to be provided in this document. This document was not provided and is requested.

1.14. A works programme has not been provided and this information is requested.

1.15. Monitoring during construction is being proposed. Such a mitigation measure should be adopted.

1.16. Queries and requests for further information are summarised in Appendix 2.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 25 September 2015 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 465 – 467 Finchley Road, Camden Reference 2015/2557/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 *"basement development to create storage space for A1/A2 units at the ground floor of 465 – 467 Finchley Road".*

2.6. CampbellReith accessed LBC's Planning Portal on 8 0ctober 2015 and gained access to the following additional relevant documents for audit purposes:

- Basement Impact Assessment Stage 1 – 3 – Southern Testing Limited, dated March 2015
- Appendices to Southern Testing Limited's report

- Basement Impact Assessment and Construction Method Statement – Abstruct Consulting Engineers, dated April 2015.
- Location Plan (OS Map)
- Architect's – Milan Babic Architects Drawings Nos

  PA/BS/679/101

  PA/BS/679/102

  PA/BS/679/200

  PA/BS/679/201

  AB1115_0001

  AB1115_0008

  AB1115_0009

  AB1115_0102
- TFL Consultation, undated

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes No	Checker and Reviewer, not the Author for the STL screening and scoping report The BIA and Construction Method Statement report author is a Chartered Structural Engineer, however, no proof is given to demonstrate the author has some experience in engineering geology.
Is data required by Cl.233 of the GSD presented?	No	BIA and construction method statement contains most of the information required, however, a programme of works is not 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	Abstruct BIA Section 9
Are suitable plan/maps included?	Yes	STL Stage 1 and 2 report and supplementary drawings.
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	STL Stage 1 and 2 report Section G-14
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	STL Stage 1 and 2 report Section G-13 and Abstruct report Section 12 and 13.
Hydrology Screening:	Yes	Justification for the 'No' answers provided in Abstruct report Section

Item	Yes/No/NA	Comment
Have appropriate data sources been consulted? Is justification provided for 'No' answers?		12 and 13.
Is a conceptual model presented?	Yes	
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	STL Stage 2 report, however, the scoping only identified the issues and not the impact as required by Cl.245 of the GSD.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	STL Stage 2 report, however, the scoping only identified the issues and not the impact as required by Cl.245 of the GSD.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	STL Stage 2 report, however, the scoping only identified the issues and not the impact as required by Cl.245 of the GSD.
Is factual ground investigation data provided?	Yes	STL Stage 3 Site Investigation Report Appendix A
Is monitoring data presented?	Yes	STL Stage 3 report Section F-17
Is the ground investigation informed by a desk study?	Yes	STL Stage 3 report Section B-5.1 to 5.5 although contamination issues were not considered in the report.
Has a site walkover been undertaken?	Yes	STL Stage 3 report Section B-6
Is the presence/absence of adjacent or nearby basements confirmed?	No	STL Stage 1 and 2 report notes the need to confirm the presence of a basement beneath the adjacent property but further states no planning applications were noted for the immediate adjacent properties.
Is a geotechnical interpretation presented?	Yes	STL Stage 3 Section F
Does the geotechnical interpretation include information on retaining wall design?	Yes	STL Stage 3 Section F-21 although it should be noted that the suggested undrained shear strength value for the London Clay is

Item	Yes/No/NA	Comment
		optimistic.
Are reports on other investigations required by screening and scoping presented?	Yes No	STL Stage 3 and Abstruct BIA and Construction Method Statement. Statement on ground movements in relation to nearby Highway and possible utilities running beneath the roads.
Are baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	No	The STL report does not confirm the presence or absence of nearby basements but notes the need for an inspection to confirm.
Is an Impact Assessment provided?	No	The Abstruct report Sections 12 & 13 gives a brief discussion on drainage and surface water flooding but this is not adequate.
Are estimates of ground movement and structural impact presented?	No	Inadequate. See Audit paragraphs 4.7 and 4.8.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	No	Impact on adjacent roads not considered.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes/No	Abstruct report Section 10 gives mitigation measures to control heave and possible effects of groundwater but no mitigation measures have been given in the event of flooding from a storm.
Has the need for monitoring during construction been considered?	Yes	Abstruct report Section 14.
Have the residual (after mitigation) impacts been clearly identified?	No	More information is needed on the topography of West End Lane in relation to the direction of flow in the event of surface water flooding.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	See Audit paragraphs 4.6, 4.7 and 4.8.

Item	Yes/No/NA	Comment
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	See Audit paragraphs 4.6, 4.7 and 4.8.
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	No	Not explicitly. See Audit paragraph 4.7.
Are non-technical summaries provided?	No	

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried in part by Southern Testing Limited (Screening and Scoping Study and Site Investigation Report) with the Impact Assessment and Construction Method Statement undertaken by Abstruct consulting engineers. The individuals concerned in the production of the screening and scoping report have suitable qualifications. The Basement Impact Assessment and Construction Method Statement was prepared by a Chartered Structural Engineer but no evidence is provided to show the author has experience in engineering geology.

4.2. It is acknowledged that the basement will be founded within the London Clay, which based on the ground conditions presented in the STL Stage 3 report extends to within 0.26 metres of the existing site surface. We accept that although groundwater was monitored between 3.60 and 3.70m bgl within the London Clay, groundwater is not expected to be an issue and pumping is likely to be sufficient to deal with any perched groundwater.

4.3. It is accepted that the BIA has shown that the development will have no significant effect on slope or ground stability of the surrounding area and will not affect the hydrogeology of the surrounding area.

4.4. It is accepted that the BIA has shown that the development will have little detrimental effect on surface water discharges to the network drainage system.

4.5. Finchley Road and West End Lane were both flooded in the 2002 flood event. We accept the statement contained in the BIA that indicates the risk of surface water flooding is unlikely, however, more evidence such as topographical information on West End Lane is needed to show that in a potential reoccurrence the basement will be unaffected.

4.6. The proposed basement will be constructed using established techniques which include underpinning. Although the Construction Method Statement provides plans of each stage of basement excavation and construction, including temporary prop positions, detailed sections are required to better indicate the propping arrangement. An assessment of loadings for temporary foundations is requested.

4.7. The BIA states that long term settlement of the underpins are negligible but does not give specific values or any indication of strains calculated for a damage assessment. It is not clear if both horizontal and vertical movements have been considered. A Pdisp analysis was undertaken and the Abstruct report gave maximum heave values on the proposed basement slab, however, heave values on the adjacent roads and the party wall are not given. Additional information demonstrating that the above have been considered is requested together with a predicted damage category for the neighbouring building.

4.8. Although the scoping highlighted the need for an assessment of ground movements in relation to the adjacent highways, the BIA has not considered the impact, if any, on West End Lane and Finchley Road and any utilities that might be running beneath these roads. A response from Transport for London (TFL) who own the Finchley Road highway and footpath, as well as part of West End Lane, highlights the need to obtain an agreement in principle from TFL prior to the commencement of construction activities.

4.9. It is noted that the site is on a TFL red route with both Finchley Road and West End Lane surrounded by double red and double yellow lines. It is noted that TFL refer to a construction management plan (CMP) and require details on construction vehicle loading and unloading to be provided in this document. This document was not available on the London Borough of Camden planning portal.

4.10. It is noted that a works programme has not been submitted as required by Cl.233 of the GSD.

5.0 CONCLUSIONS

5.1. The screening and scoping was carried by Southern Testing Limited (STL) who are a well-known firm of geotechnical consultants. The author does not have suitable qualifications but the checker and reviewer do have suitable qualifications. Whilst we are not familiar with Abstruct Consulting Engineers who carried out the impact assessment and construction method statement, the author is a Chartered Structural Engineer, however, no proof is given to demonstrate that the author has some experience in engineering geology. Additional information is required to confirm the Abstruct report author has suitable qualifications.

5.2. The BIA states that the development will have a negligible impact on slope or ground stability of the surrounding area and will not affect the hydrogeology of the surrounding area and the risk is accepted as being very low.

5.3. It is accepted that although groundwater could be encountered, this is likely to be perched groundwater within the London Clay and simple mitigation measures such as pumping should effectively control potential variations to the groundwater regime.

5.4. The BIA has stated that the development will have little detrimental effect on surface water discharges to the network drainage system and this is accepted.

5.5. More information is required to demonstrate that the risk of surface water flooding the basement in the event of a storm is unlikely as stated in Section 13 of the Abstruct report.

5.6. The proposed basement will be constructed by carrying out mass underpinning with a reinforced concrete retaining wall in front of the underpins. Additional information to better indicate the propping arrangement and the loadings on the temporary foundations is required to demonstrate the structural stability of the neighbouring property is maintained.

5.7. The BIA does not consider the effect of heave on the neighbouring property and estimates of ground movement and damage category are not provided. Additional information is required to demonstrate the potential damage to the neighbouring property is within acceptable limits.

5.8. The BIA does not consider the impact on Finchley Road and West Lane and any possible utilities running beneath them. Additional information is needed to demonstrate the roadways and any utilities running beneath them are not adversely affected by the development.

5.9. Details on construction vehicle loading and unloading are required by TFL in a construction management plan as both Finchley Road and West End Lane are surrounded by double red and double yellow lines. This has not been provided and is requested.

5.10. A works programme as required by Cl. 233 of the GSD has not been provided and this information is requested.

5.11. Proposals are provided for a movement monitoring strategy and contingency measures during excavation and construction and such measures should be adopted.

Appendix 1: Resident's Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
TFL	Transport for London Tunnels and structures Palestra (8TH FLOOR – Zone Y5) 197 Blackfriars Road London SE1 8NJ	Not provided	Details on construction vehicles loading and unloading lawfully on West End Lane and Finchley Road	Refer to Audit paragraph 5.9

Appendix 2: Audit Query Tracker

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Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA Author Qualifications	Evidence of Abstruct authors' experience in engineering geology	To be provided in updated document	
2	BIA format	Non technical summaries and conceptual model not provided	To be provided in updated document	
3	BIA format	A works programme has not been submitted as required by Cl.233 of the GSD	To be provided in updated document	
4	Stability	Detailed cross sections to better indicate propping arrangement is required. Loadings on temporary foundations are also requested.	To be provided in updated document	
5	Stability	No explicit confirmation that damage to adjacent property will not exceed Burland Category 2	To be provided in updated document	
6	Stability	BIA offers monitoring of existing building walls	Monitoring regime and trigger levels to be agreed with Party Wall Surveyor	N/A
7	Stability	No impact assessment of West End Lane and Finchley Road	To be agreed with TFL	N/A
8	Surface water flooding	Topographical information for West End Lane to determine the direction of flow in the event of flooding is needed. Mitigation measures should also be provided	To be provided in updated document	
9	TFL red route – construction vehicle loading and unloading	Details on construction vehicle loading and unloading is required by TFL as both Finchley Road and West End Lane are surrounded by double red and double yellow lines.	To be agreed with TFL	N/A

10	Construction management plan	The TFL response refers to a construction management plan (CMP), however, this was not available on the LBC's planning portal.	To be provided in updated document	

Appendix 3: Supplementary Supporting Documents

None