CampbellReith
consulting engineers

Land to the Rear of 222 Euston Road, Adjacent to 210 Euston Road, Fronting Stephenson Way London NW1 2DA

Basement Impact Assessment

For

London Borough of Camden

Project Number: 12727-91

Revision: F1

April 2019

Campbell Reith Hill LLP
Friars Bridge Court
41-45 Blackfriars Road
London
SE1 8NZ

T:+44 (0)20 7340 1700
E:london@campbellreith.com
W:www.campbellreith.com

Document History and Status

Revision	Date	Purpose/Status	File Ref	Author	Check	Review
D1	September 2018	Comment	GHemb12727-91-100918-222-Euston Road-D1.docx	GK	GH	GK
D2	November 2018	Comment	GKemb-jap12727-91-211118-222-Euston Road-D2.docx	GK	GK	EMB
F1	April 2019	Planning	GKemb-gbw12727-91-240419-222-Euston Road-F1.docx	GK	EMB	EMB

Document Details

Last saved	24/04/2019 16:05
Path	GKemb-gbw12727-91-240419-222-Euston Road-F1.docx
Author	G Kite, BSc MSc DIC FGS
Project Partner	E M Brown, BSc MSc CGeol FGS
Project Number	12727-91
Project Name	222 Euston Road
Planning Reference	2018/2316/P

Contents

Appendices

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 222 Euston Road, London NW1 2DA (planning reference 2018/2316/P). The basement is considered to fall within Category C 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 BIA has been prepared by Card Geotechnics Ltd. The qualifications of the authors are in accordance with LBC guidance.

1.5. The proposed development comprises erection of a seven-storey building plus basement for student accommodation and hotel use. The proposed basement sits within the footprint of the building. Between approximately 2.5m to 4.0m of excavation is proposed.

1.6. The original BIA included Screening and Scoping assessments. In the revised submissions, site investigation and the land stability assessment have been provided.

1.7. In the revised submissions, groundwater conditions have been established during the site investigation. The impact to the hydrogeological environment has been assessed as minor, considering a secant piled wall. Impacts would reduce further if a contiguous piled wall were adopted.

1.8. The BIA identifies construction methodology options but does not confirm which will be used. The land stability assessment is based on assumptions of the form of the retaining walls and temporary propping arrangements. A Basement Construction Plan (BCP) is recommended to confirm that the assumptions made in the BIA are reasonable.

1.9. The revised submissions include inspection pit records from the site investigation to confirm the nature of adjoining buildings' foundations.

1.10. The revised ground movement assessment (GMA) has addressed previous queries and is considered reasonably conservative. The GMA presented is based on assumptions and the final scheme design should be confirmed within the BCP.

1.11. The proposed development is within a mapped Critical Drainage Area. The Drainage Strategy recommends the attenuation of surface water. The final scheme should be agreed with Thames Water and LBC. There will be no impacts to the wider hydrological environment.

1.12. The site is in an area at low to medium risk of surface water flooding. Flood risk mitigation is discussed within the Drainage Strategy, and attenuation is proposed to reduce discharge to sewers in accordance with best practice.

1.13. An outline construction programme has been requested but not provided. The programme should be provided within the BCP required to confirm the final methodology and design.

1.14. Queries and requests for information are discussed in Section 4 and summarised in Appendix 2. Considering the revised submissions and the requirement for a BCP to confirm assumptions used as the basis of the BIA (e.g. construction and structural information), the BIA meets the criteria of CPG Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 11 July 2018 to carry out a Category C Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 222 Euston Road, London NW1 2DA, Camden Reference 2018/2316/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): Basements.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.
- The 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; 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 planning portal describes the proposal as: *"Erection of a seven-storey building plus basement for student accommodation use (C2) (in term time) and hotel use (C1) (outside term time) with 78 rooms of accommodation on the upper floors with shared amenity space at ground and sixth floor level and terrace at 6th floor level fronting Stephenson Way. Retention of the vehicular easement from Stephenson Way to the rear of 222 Euston Road".*

The planning portal also confirmed that neither the site nor neighbouring properties are listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal in August 2018 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Phase 1 – Screening and Scoping Report (ref CG/28583) dated May 2018 by Card Geotechnics Ltd.
- Existing and proposed elevations and plans dated March 2018 by TP Bennett Architects.
- Planning Statement dated May 2018 by TP Bennett Architects.
- Design and Access Statement dated May 2018 by TP Bennett Architects.
- Drainage Strategy (ref 181023/DS/MK/RS/01) dated April 2018 by Lanmor Consulting.

2.7. CampbellReith was provided with the following document in October 2018:

- Basement Impact Assessment (ref CG/28583) dated October 2018 by Card Geotechnics Ltd.

2.8. CampbellReith was provided with the following documents in March and April 2019:

- Basement Impact Assessment (ref CG/28583) Rev 1 dated March 2019 and Rev 2 dated April 2019 by Card Geotechnics Ltd.
- Drainage Strategy (ref181023/DS/MK/RS/01 Rev A) dated November 2018 by Lanmore Consulting.

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	BCP required to confirm construction / structural scheme and programme.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	BCP required to confirm construction / structural scheme.
Are suitable plans/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	BCP required to confirm construction / structural scheme.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Updated in revised submissions.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Updated in revised submissions and drainage strategy.
Is a conceptual model presented?	Yes	Based on assumptions; BCP required to confirm construction / structural scheme.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	BCP required to confirm construction / structural scheme.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Updated in revised submissions.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Updated in revised submissions / drainage strategy.
Is factual ground investigation data provided?	Yes	Presented in revised submissions.
Is monitoring data presented?	Yes	Presented in revised submissions.
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	No	Comments in the BIA suggest that no site walkover has been undertaken.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	The surrounding properties at 200 and 210 Euston Road, 152-156 North Gower Street and the UCL Farr Institute are stated to have basements; confirmed by SI.
Is a geotechnical interpretation presented?	Yes	Presented in revised submissions.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Presented in revised submissions.

Item	Yes/No/NA	Comment
Are reports on other investigations required by screening and scoping presented?	Yes	Drainage strategy; BCP required to confirm construction / structural scheme.
Are baseline conditions described, based on the GSD?	Yes	BCP required to confirm construction / structural scheme.
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	BCP required to confirm construction / structural scheme.
Are estimates of ground movement and structural impact presented?	Yes	BCP required to confirm construction / structural scheme; revised GMA calculations considered reasonably conservative.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	BCP required to confirm construction / structural scheme.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	BCP required to confirm construction / structural scheme.
Has the need for monitoring during construction been considered?	Yes	Outline advice provided; detail to be provided within BCP.
Have the residual (after mitigation) impacts been clearly identified?	Yes	BCP required to confirm construction / structural scheme.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	BCP required to confirm construction / structural scheme; revised GMA calculations considered reasonably conservative.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Revised BIA / drainage strategy: to be agreed with Thames Water and LBC.

Item	Yes/No/NA	Comment
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	BCP required to confirm construction / structural scheme.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	BCP required to confirm construction / structural scheme.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1. The BIA has been prepared by Card Geotechnics Ltd. The qualifications of the authors are in accordance with LBC guidance.

4.2. The proposed development comprises erection of a seven-storey building plus basement for student accommodation use (C2) (in term time) and hotel use (C1) (outside term time) with 78 rooms of accommodation on the upper floors with shared amenity space at ground and sixth floor level and a terrace at 6th floor level fronting Stephenson Way. The vehicular easement from Stephenson Way to the rear of 222 Euston Road is retained. The proposed basement sits within the footprint of the building. Between approximately 2.5m and 4.0m of excavation is proposed for a basement floor to ceiling height of approximately 3.0m.

4.3. Final construction methodologies and structural information are not confirmed. Confirmed formation levels and construction methodologies are required as part of the BIA. The land stability assessment is based on secant piling to form retaining walls, and assumed temporary propping arrangements. Whilst some of these assumptions may be considered conservative for the purposes of a stability assessment, a Basement Construction Plan (BCP) is recommended in order to confirm that the assumptions made in the BIA remain valid. If sheet piling is to be adopted, the BCP should include appropriate movement and vibration assessment.

4.4. The original BIA included Screening and Scoping assessments. The BIA identified that site investigation and impact assessments would be required as part of detailed design, but were not submitted for audit. In the revised submissions, site investigation and the land stability assessment have been provided.

4.5. The site investigation confirms Made Ground over Lynch Hill Gravel and London Clay. Inspection pits confirmed assumptions in regard to the depth of neighbouring foundations. Interpreted geotechnical design parameters are presented.

4.6. The Lynch Hill Gravel Member is a ‘Secondary A Aquifer’. Groundwater monitoring data indicates that the proposed basement formation level will be above groundwater level within the gravels.

4.7. The original BIA states that impacts to groundwater flow are expected to be negligible, based on formation level of the basement being above groundwater level and flow between/around contiguous piles. The revised BIA assumes a combination of sheet and secant piled walls will be adopted. The impact to the hydrogeological environment is stated to be minor, with conceptual model sections indicating that groundwater will flow through the gravel beneath neighbouring basements. Impacts would reduce further if a contiguous piled wall were adopted.

4.8. The development site is within 100m of the historical course of the River Fleet to the southeast. The BIA states that groundwater flow across the site is expected to be to the southeast.

4.9. In the revised submissions, outline permanent and temporary structural information options are provided. These should be confirmed within a BCP.

4.10. A ground movement assessment (GMA) is presented, based on assumed secant piled retaining walls of 15m length and stiffly propped temporary and permanent structural schemes. The GMA refers to published research to reduce typically used CIRIA C760 movement calculations. Considering the scale of the development, this approach is accepted, but the final scheme should be confirmed within a BCP.

4.11. The GMA predicts Category 0 (Negligible) damage to neighbouring properties. Previous audits queried the GMA methodology. In the most recent submission, the impacts calculated and referred to within Appendix H are considered reasonably conservative and are accepted. Note that if sheet piling is to be adopted, the BCP should include appropriate movement and vibration assessment.

4.12. In addition to neighbouring buildings, it has been identified that there are LUL infrastructure and sewers in the vicinity of the site. Based on the current GMA, LUL assets are outside of the zone of influence of the works. Where applicable, third party asset owner should be approached to agree asset protection requirements.

4.13. A methodology and guidance for monitoring structural movements during construction is provided in outline. This should be confirmed within the BCP.

4.14. The proposed development will not result in a change to impermeable site area. However, the site is within a mapped Critical Drainage Area. The Drainage Strategy recommends the attenuation of surface water flow to 3.7 l/s using an attenuation tank located below the basement floor level. There will be no impacts to the wider hydrological environment. However, Thames Water and LBC will need to approve the final drainage design and off-site flow rates.

4.15. The site is in an area at low to medium risk of surface water flooding. Flood risk mitigation is discussed within the Drainage Strategy, and attenuation is proposed to reduce discharge to sewers in accordance with best practice. It is stated that the attenuation scheme will benefit both the proposed development and neighbouring buildings, lowering the risk of surface water flooding.

4.16. An outline construction programme has been requested but not provided. The programme should be provided within the BCP required to confirm the final methodology and design.

5.0 CONCLUSIONS

5.1. The qualifications of the authors are in accordance with LBC guidance.

5.2. In the revised submissions, site investigation and the land stability assessment have been provided.

5.3. The BIA identifies construction methodology options but does not confirm which methodologies will be used. A Basement Construction Plan (BCP) is recommended in order to confirm that the assumptions made in the BIA remain valid.

5.4. In the revised submissions, groundwater conditions have been established during the site investigation. The impact to the hydrogeological environment has been assessed as minor, considering a secant piled wall.

5.5. The revised ground movement assessment (GMA) has addressed previous queries and is considered reasonably conservative. The GMA presented is based on assumptions and the final scheme design should be confirmed within the BCP.

5.6. The proposed development will not result in a change to impermeable site area. A Drainage Strategy is presented. It is accepted there will be no impact to the wider hydrological environment.

5.7. The site is in an area at low to medium risk of surface water flooding. Flood risk mitigation is discussed within the Drainage Strategy.

5.8. An outline construction programme should be provided.

5.9. Queries and requests for information summarised in Appendix 2. Considering the revised submissions and the requirement for a BCP to confirm assumptions used as the basis of the BIA (e.g. construction and structural information), the BIA meets the criteria of CPG Basements.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

CampbellReith
consulting engineers

Audit Query Tracker

Query No	Subject	Query	Status/Response	Date closed out
1	BIA	Confirm development proposals and construction methodologies, including levels and dimensions.	Constructions methodology options presented. BCP required to confirm final scheme and that assumptions within the stability assessment are reasonable.	BCP required
2	BIA	Confirm ground and groundwater conditions via site specific investigation and monitoring.	Closed	November 2018
3	BIA	Provide interpretative geotechnical information, including retaining wall parameters.	Closed	November 2018
4	Stability	Provide permanent and temporary structural information.	Structural options presented. BCP required to confirm final scheme and that assumptions within the stability assessment are reasonable.	BCP required
5	Stability	Demonstrate depth of adjacent basements / foundations, via records or investigation.	Closed	November 2018
6	Stability	Undertake a ground movement and damage impact assessment. If applicable, demonstrate consultation with asset owners. Outline structural monitoring requirements.	BCP required to confirm final scheme and that assumptions within the stability assessment are reasonable. GMA has been revised and is considered reasonably conservative based on 15m long secant piled walls.	BCP required
7	Hydrogeology	Confirm hydrogeological impact assessment.	Closed	April 2019
8	Hydrology	Confirm flood risk assessment and mitigation proposals.	Closed	April 2019
9	BIA	Provide an outline construction programme.	To be confirmed	BCP required

Appendix 3: Supplementary Supporting Documents

None

London

Friars Bridge Court
41- 45 Blackfriars Road
London, SE1 8NZ

T: +44 (0)20 7340 1700
E: london@campbellreith.com

Birmingham

Chantry House
High Street, Coleshill
Birmingham B46 3BP

T: +44 (0)1675 467 484
E: birmingham@campbellreith.com

Surrey

Raven House
29 Linkfield Lane, Redhill
Surrey RH1 1SS

T: +44 (0)1737 784 500
E: surrey@campbellreith.com

Manchester

No. 1 Marsden Street
Manchester
M2 1HW

T: +44 (0)161 819 3060
E: manchester@campbellreith.com

Bristol

Wessex House
Pixash Lane, Keynsham
Bristol BS31 1TP

T: +44 (0)117 916 1066
E: bristol@campbellreith.com

UAE

Office 705, Warsan Building
Hessa Street (East)
PO Box 28064, Dubai, UAE

T: +971 4 453 4735
E: uae@campbellreith.com