CampbellReith
consulting engineers

14/15 Gt James St
London
WC1N 3DP

Basement Impact Assessment
Audit

For

London Borough of Camden

Project Number: 12985-84
Revision: F1

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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 14-15 Gt James, London WC1N 3DP (planning reference 2019/3871/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 properties form part of the terrace between 3 and 16 Great James Street which are Grade II Listed, including the applicant's property.

1.5. The proposed redevelopment works involve the partial demolition of the existing building at 15 Great James Street and extension of the existing lower ground floor.

1.6. The BIA has been reviewed and approved by experienced Chartered Engineers with appropriate ground engineering experience. The BIA has not been reviewed by a Chartered Hydrogeologist.

1.7. A site investigation has been carried out and used to define a ground model and to determine geotechnical parameters.

1.8. Outline structural information and a construction method statement have been presented, along with an outline construction programme.

1.9. The GMA has been reviewed to include an assessment on the applicant's Listed property.

1.10. A utility survey for the site has been presented. No underground infrastructure is considered to be within the zone of influence of the proposed basement.

1.11. The proposed development will be constructed above the standing groundwater level. There will be no impact to the wider hydrogeological environment.

1.12. It is accepted that the proposal will not impact the wider hydrological environment. A final drainage design should be agreed with Thames Water and London Borough of Camden.

1.13. It is accepted the site is in an area of low risk of flooding. Appropriate standard flood risk mitigation measures should be adopted within the final design.

1.14. In view of the supporting information received in December 2019 and January 2020, the BIA meets the requirements of CPG Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 8th November 2019 to carry out a Category C Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 14 and 15 Great James Street, London WC1N 3DP, Camden Reference 2019/3871/P. It is noted that no basement is proposed at 14 Great James Street.

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. March 2018.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.
- Local Plan 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 *"Erection of two-storey rear extension from lower ground to ground floor levels (following demolition of existing); Formation of roof terraces at first and main roof levels; Erection of dormer roof extension and installation of 2 roof lights to rear roof slope all to no. 15; Installation of glazed balustrade to rear parapet across nos 14 and 15 (Use Class B1)."*

The properties of the terrace from No. 3 to 16 Great James Street are listed buildings (Grade II*).

2.6. CampbellReith accessed LBC's Planning Portal on 26th November 2019 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment dated July 2019 by Webb Yates Engineers Ltd.
- Geotechnical Desk Study dated July 2019 by Webb Yates Engineers Ltd.
- Ground Movement Assessment dated July 2019 by Webb Yates Engineers Ltd.
- Existing and proposed drawings by Owen Architects.

2.7. The following additional information was submitted by the applicant in December 2019 and January 2020 following CampbellReith's previous audit revision:

- Revised Basement Impact Assessment dated July 2019 by Webb Yates Engineers Ltd (ref.: J4001-S-RP-0002, Revision 02, dated 13/12/2019).
- Revised Ground Movement Assessment dated July 2019 by Webb Yates Engineers Ltd (ref.: J4001-S-RP-0003, Revision 02, dated 13/12/2019).
- Geo-Environmental & Geotechnical Assessment (Ground Investigation) Report (ref.:P2342J1771/AMM, dated 01/11/2019).
- Revised Abtech UK Ltd retaining wall calculations (ref.:1439, Rev. A, dated 14/01/2020)
- Revised Abtech UK Ltd Method Statement (Rev D, dated 20/01/2020)
- Hydrogeological Regime Evaluation by Webb Yates Engineers Ltd (ref.: J4001-S-RP-0005, Revision 00, dated 20/01/2020)
- Structural Monitoring Works by Chanton Survey & Engineering (ref.:Q5052-REV-A, dated 23/10/2019)
- Response on CampbellReith's updated query tracker (dated 16/01/2020)

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	Hydrogeological assessment requires CGeol FGS.
Is data required by Cl.233 of the GSD presented?	Yes	Submitted as part of the revised information.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	BIA report, Section 3, 4 and 6.1
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	BIA report, Section 3.2.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA report, Section 3.1.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA report, Section 3.3
Is a conceptual model presented?	Yes	BIA report, Section 7.1
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA report, Section 4.2.

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA report, Section 4.1.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA report, Section 4.3.
Is factual ground investigation data provided?	Yes	Jomas' ground investigation report.
Is monitoring data presented?	Yes	Included in the ground investigation data.
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	Unknown	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	The drawings produced by Owen Architects establish the existence of adjacent basements. However, the depths and extent are not specified.
Is a geotechnical interpretation presented?	Yes	Section 8 of the ground investigation report and Section 2.4 of the Ground Movement Assessment.
Does the geotechnical interpretation include information on retaining wall design?	Yes	As above.
Are reports on other investigations required by screening and scoping presented?	Yes	SI report, GMA.
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	The drawings produced by Owen Architects establish the existence of adjacent basements. However, the depths and extent are not specified.
Is an Impact Assessment provided?	Yes	

Item	Yes/No/NA	Comment
Are estimates of ground movement and structural impact presented?	Yes	GMA provided.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	The assumptions made have been confirmed by a site-specific SI.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Included in BIA report, Section 4 and Section 6.2.7.
Has the need for monitoring during construction been considered?	Yes	BIA report, Section 6.3. GMA report, Section 1.2.
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?	Yes	The GMA confirms the damage occurring at the applicant's property and at neighbouring properties within the zone of influence of the basement will be within Category 1 of Burland Scale.
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	See above.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	BIA report, Section 6.2 and GMA.
Are non-technical summaries provided?	Yes	BIA report, Section 1.

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) was undertaken by Webb Yates Engineers and does not include assessment by a Chartered Hydrogeologist (CGeol FGS). However, the BIA has been reviewed and approved by experienced Chartered Engineers (CEng MICE and FICE) with demonstrable ground engineering experience. Considering the specific context of the proposed development, the hydrogeological assessment has been accepted as 4.6.

4.2. The site currently comprises a four storey London stock brick terrace house constructed in the Georgian period with a lower ground floor. The proposed redevelopment works involve the partial demolition of the existing building at 15 Great James Street, extension of its lower ground floor (i.e. installation of underpins/reinforced concrete walls and excavation at the eastern part of the property's footprint) and the construction of the newly planned building layout. The proposed excavation footprint is approximately 9m long and 6m wide.

4.3. The LBC Instruction to proceed with the audit identified that the applicant's property is a Grade II listed building. The neighbouring terraced properties between 3 and 16 Great James Street are also Grade II Listed.

4.4. The site is bounded by two properties: 14 Great James Street to the south and 16 Great James Street to the north. The drawings produced by Owen Architects establish the existence of adjacent basements. However, the depths and extent of these neighbouring structures are not confirmed.

4.5. A site investigation has been undertaken, proving Made Ground overlying the River Terrace Deposits, which in turn overlie the London Clay Formation. The proposed formation level for the basement is 19.70m AOD within the River Terrace Deposits, which are considered a suitable bearing stratum. The BIA identified the potential for Made Ground to be locally encountered at formation level and recommends to excavate until the River Terrace Deposits are encountered and backfill to the required level with compacted fill.

4.6. A query was raised in the previous audit regarding the impact of the proposed basement on the hydrogeological environment. A 'Hydrogeological Regime Evaluation' has been presented by Webb Yates which assesses the potential impacts. Although the assessment identifies perched water within the Made Ground, the development is to be constructed above standing groundwater level. In addition, a suitable temporary works strategy that indicates mitigation measures to guarantee structural stability during construction and to avoid any adverse impact on the wider hydrogeological environment is presented, which is accepted

4.7. The BIA states that the basement will be constructed in a bottom-up sequence, with retaining walls formed by underpinning and RC L-sections. Sufficient structural information and a

construction method statement has been provided to confirm the loads, sequencing and propping arrangements. An outline programme of work has also been submitted.

4.8. Geotechnical design parameters including those for retaining wall design have been presented and are based on the site investigation findings. Outline retaining wall calculation have also been presented.

4.9. A Ground Movement Assessment (GMA) has been undertaken to demonstrate that ground movements and consequential damage to neighbouring properties will be within LBC's policy requirements. Analysis of both horizontal and vertical ground movements has been undertaken following CIRIA 760 guidance, and settlement analysis has been undertaken utilising industry standard software.

4.10. The GMA has been updated to include ground movements to the applicant's property and states that damage occurring to the applicant property and to neighbouring properties will be within Category 1 (Very Slight) of the Burland Scale.

4.11. It is acknowledged that, whilst CIRIA C760 is intended for use with embedded retaining walls, the predicted ground movements are within the range typically anticipated for underpinning techniques carried out with good control of workmanship.

4.12. A utility survey for the site and a CCTV survey have been presented. An independent check revealed the presence of a storm relief sewer and a Royal Mail Tunnel at a distance of c. 50m from the site, which is consider to be outside the zone of influence of the proposed basement.

4.13. As requested in the previous audit an outline structural monitoring proposal indicating duration, frequency of monitoring, monitoring targets and trigger levels has been provided.

4.14. The site is located within a Critical Drainage area (Group3_003). However, as the proposed basement will not lead to any significant change in impermeable site area, it is accepted that the proposal will not impact the hydrological environment. A final drainage design should be agreed with Thames Water and LBC, and attenuation SUDS should be introduced in accordance with best practice.

4.15. It is accepted the site is in an area of low risk of flooding. Notwithstanding this, appropriate standard flood risk mitigation measures should be adopted within the final design.

5.0 CONCLUSIONS

5.1. The BIA has been reviewed and approved by experienced Chartered Engineers (CEng MICE and FICE).

5.2. A site investigation has been carried out and used to define a ground model and to determine geotechnical parameters.

5.3. Outline structural information and a construction method statement have been presented, along with an outline construction programme has been presented.

5.4. The GMA has been revised to include an assessment on the applicant's Listed property.

5.5. No underground infrastructure is considered to be within the zone of influence of the proposed basement.

5.6. There will be no hydrogeological impacts from the proposed development.

5.7. It is accepted that the proposal will not impact the wider hydrological environment. A final drainage design should be agreed with Thames Water and LBC, and attenuation SUDS should be introduced in accordance with best practice.

5.8. It is accepted the site is in an area of low risk of flooding. Appropriate standard flood risk mitigation measures should be adopted within the final design.

5.9. In view of the supporting information received in December 2019 and January 2020, the BIA meets the requirements of CPG Basements.

Appendix 1: Residents' Consultation Comments

None (relevant to geology, hydrogeology or hydrology)

Appendix 2: Audit Query Tracker

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Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA Format	The BIA authors should include a Chartered Hydrogeologist (CGeol FGS).	Closed – 4.1	January 2020
2	BIA Format	Desk Study information to be provided ie borehole data used as the basis of assessment	Closed – No more relevant as a SI was undertaken	
3	BIA Format	An outline construction programme to be provided.	Closed – 4.7	
4	BIA Format	Utilities / underground infrastructure information to be provided.	Closed – 4.12	
5	Stability / Hydrogeology	A site-specific investigation is required.	Closed – 4.5	
6	Stability	Confirm the ground model and geotechnical design parameters.	Closed – 4.8	
7	Stability	Outline structural information and a construction method statement should be presented, sufficient to confirm the loads, sequencing and propping arrangements that have been assumed in the assessments.	Closed – 4.7	
8	Stability	The GMA should be reviewed. In addition to the assessment of neighbouring structures, the GMA should also assess the predicted damage to the applicant's Listed property and utilities.	Closed – 4.9 – 4.10	
9	Stability	A Monitoring Strategy should be provided	Closed – 4.13	
10	Hydrogeology	Hydrogeological assessment required based on actual groundwater conditions	Closed – 4.6	

Appendix 3: Supplementary Supporting Documents

None

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