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7 ABC Bayham Street, London NW1 0EY

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12985-08

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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 7 ABC Bayham Street, London NW1 0EY (planning reference 2018/3647/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 proposed development comprises the redevelopment of the site to include a five-storey building with a two-storey basement.

1.5. The BIA has been prepared by LBH Wembley and TZG Partnership Engineering Consultants, with supporting documents by Risk Management Ltd. The qualifications of the author for the land stability assessments have not been demonstrated in accordance with LBC guidance.

1.6. A desk study broadly in accordance with LBC guidance is presented. Utilities information within the zone of influence of the proposed development should be presented.

1.7. The Geo-Environmental report identifies varying thickness of Made Ground overlying the London Clay Formation. Factual site investigation information including exploratory hole records should be presented.

1.8. It is accepted there will be no impact to the local or wider hydrogeological environment. However, perched water is identified within Made Ground that may impact stability during construction, depending on the methodology adopted.

1.9. Options for construction sequencing and methodology are presented. Further information will be required in order to confirm impact assessments are comprehensive, as detailed in Section 4.

1.10. A Ground Movement Assessment is presented that considers the movements relating to the proposed basement construction and the effects on the adjacent properties. The GMA is not accepted, as detailed in Section 4. Additionally, Category 2 (Slight) damage, in accordance with the Burland Scale, is predicted to some properties, which is not allowable under LBC's policies. Consideration should also be made of impacts to the highway, including underlying utilities.

1.11. An outline construction programme should be presented.

1.12. It is accepted there will be no impact to the hydrological environment.

1.13. Impact assessments should be reviewed once the additional information required has been presented and mitigation proposals updated, as required.

1.14. Queries and matters requiring further information or clarification are discussed in Section 4 and summarised in Appendix 2. Until the further information required has been presented, the BIA does not meet the criteria of CPG Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 7 September 2018 to carry out a Category C Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 7 ABC Bayham Street, London NW1 0EY, Camden Reference 2018/3647/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
- 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 described the planning proposal as: "*Demolition of existing office buildings (B1) and erection of 5 storey (plus two storey basement) building comprising mixed office (B1) and hotel (C1) use.*"

LBC's Planning Portal confirmed that the site lies within the Camden Town Conservation Area but is not a listed building.

2.6. CampbellReith accessed LBC's Planning Portal on 5 October 2018 and gained access to the following relevant documents for audit purposes:

- Hydrogeological and Hydrological Assessment dated July 2018 (ref LBH4532 Ver 1) by LBH Wembley.
- Land Stability Basement Impact Assessment dated July 2018 by TZG Partnership Engineering Consultants.
- Geo-environmental report and Site Investigation (ref RML6698) dated June 2018 by Risk Management Ltd.
- Proposed sections, elevations and floor plans with report (ref aa-a-1704) dated June and July 2018 by Ambigram Architects.
- Ecology Report (ref I&BPB7760R001D0.1, Rev 0.1/Final) dated 23 July 2018 by Royal Haskoning DHV.

2.7. CampbellReith was not advised of any comments and objections pertaining to the BIA.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	Evidence of the credentials for the Author of the BIA for Land Stability Assessment has not been provided.
Is data required by Cl.233 of the GSD presented?	No	Utility / underground infrastructure information required; an outline construction programme should be presented.
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	
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	Land Stability Assessment BIA report, Section 4.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Hydrogeological and Hydrological BIA report, Section 5.1.1.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Hydrogeological and Hydrological BIA report, Section 5.1.2.
Is a conceptual model presented?	Yes	Described within the text and indicated within construction figures.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Land Stability Assessment BIA report, Section 5.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Hydrogeological and Hydrological BIA report, Section 5.2.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Is factual ground investigation data provided?	No	Geoenvironmental report and Site Investigation by Risk Management Ltd. However, a number of appendices have not been provided for review including the borehole logs for the site investigation.
Is monitoring data presented?	Yes	Groundwater and gas monitoring results provided in appendices of Risk Management Ltd report.
Is the ground investigation informed by a desk study?	Yes	Phase I Environmental Risk Assessment provided in Risk Management Ltd report.
Has a site walkover been undertaken?	Yes	Risk Management Ltd report.
Is the presence/absence of adjacent or nearby basements confirmed?	No	Assumptions are made regarding presence of neighbouring basements, although not confirmed.
Is a geotechnical interpretation presented?	Yes	Risk Management Ltd report, Section 7. However, additional information to inform the GMA is required ie length of proposed secant piles / sheet piles, settlement etc
Does the geotechnical interpretation include information on retaining wall design?	Yes	Land Stability Assessment BIA report, Section 7 and Appendix E. However, additional information to inform the GMA is required ie length of proposed secant piles / sheet piles, settlement etc

Item	Yes/No/NA	Comment
Are reports on other investigations required by screening and scoping presented?	Yes	Ecological Impact Assessment (confirming no trees to be felled during development).
Are baseline conditions described, based on the GSD?	No	Depth of proposed retaining wall piles to be confirmed.
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	However, stability assessment not accepted.
Are estimates of ground movement and structural impact presented?	Yes	Land Stability Assessment BIA report, Section 7.3 and Appendix F. However, GMA not accepted – as Section 4.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	However, GMA not accepted – as Section 4.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	GMA requires further consideration to define necessary mitigation actions.
Has the need for monitoring during construction been considered?	Yes	Land Stability Assessment BIA report, Section 5.1. depending on outcome of GMA, further detail may be required.
Have the residual (after mitigation) impacts been clearly identified?	No	GMA requires further consideration.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	GMA not accepted – as Section 4.
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	Construction methodology to be confirmed; GMA not accepted – as Section 4.

Item	Yes/No/NA	Comment
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	No	Damage Impact of Category 2 (Slight) predicted to some neighbours.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1. The BIA has been prepared by LBH Wembley (Hydrology and Hydrogeology) and TZG Partnership Engineering Consultants (Land Stability), with supporting documents (desk study and site investigation) by Risk Management Ltd.

4.2. The qualifications of the author for the land stability assessments have not been demonstrated to be in accordance with LBC guidance.

4.3. The proposed development comprises the demolition of the existing buildings on site (a mixture of single storey and two storey buildings built in the 19th and 20th Centuries) and the construction of a five-storey building with a two-storey basement for office and hotel use with associated facilities. The basement level will be excavated to a depth of approximately 8m. The site lies within the Camden Town Conservation Area.

4.4. The site investigation and BIA have been informed by a desk study broadly in accordance with the GSD Appendix G1. Consultation with TFL confirms the proposed development will not impact upon their Northern Line assets. Utilities information within the zone of influence of the proposed development should be presented, and impacts assessed as applicable.

4.5. The site investigation undertaken identifies the London Clay as the bearing formation for the proposed foundations, underlying Made Ground. The Made Ground was reportedly encountered to depths of 2.10m below ground level (bgl). Factual site investigation information including exploratory hole records should be presented to confirm this.

4.6. Interpretative geotechnical information is presented. However, the proposed foundation depths and predicted settlements, and the retaining wall toe levels, have not been confirmed, which are required to inform the Ground Movement Assessment (GMA).

4.7. Groundwater is stated to be perched in the Made Ground and was noted during monitoring visits (May and June 2018) to the installations fitted within boreholes BH1, DIS1 and DIS3 between 1.60 m and 3.80m bgl. The monitoring data suggest that groundwater may also be encountered within London Clay. However, it is accepted that this is unproductive strata and there will be no impact on the wider hydrogeological environment.

4.8. The proposed basement development will be at a depth of 8m bgl and therefore will encounter groundwater. This may impact upon stability during construction, depending upon the methodology adopted. The Land Stability Assessment considers two forms of construction – a piled 'top-down' scheme and a bottom up scheme utilising piled retaining walls and two stage underpinning. If underpinning is to be adopted, a temporary works strategy for maintaining stability of underpin excavations should be presented.

4.9. Further information is required in order to confirm impact assessments are comprehensive:

- Anticipated toe level of sheet piling and installation methodology.
- Anticipated toe levels of piles retaining walls.
- A sequence of works for underpinning.
- Groundwater control methodology.

4.10. An outline construction programme should be presented.

4.11. A Ground Movement Assessment is presented that considers the movements relating to the proposed basement construction and the effects on the adjacent properties. The GMA is not accepted for the following reasons:

- The GMA considers only a piled retaining wall. The GMA and construction methodology must be consistent.
- Toe levels of retaining walls to be provided. The current GMA makes no allowance for embedment of the retaining walls, which therefore underestimates both the magnitudes of the movements and potentially the area of the zone of influence.
- If sheet piling is adopted, a specific assessment of movement and vibrations generated by sheet piling will be required, and impacts assessed as applicable.
- The current GMA does not appear to follow the complete methodology of CIRIA C760, making assumptions about reduction in movements with distance from the pile wall rather than adopting the curves provided within the guidance. The complete assessment calculations should be presented, including contour plans and assessed movement along each of the walls.
- If retaining walls are carrying vertical building loads, settlements should be assessed and allowed for in the GMA.
- Category 2 (Slight) damage, in accordance with the Burland Scale, is predicted to some properties, which is not allowable under LBC's policies. A maximum of Category 1 (Very Slight) damage is allowable, provided suitable mitigation and contingency measures are allowed for to demonstrate feasibility.
- Consideration should be made of impacts to the highway, including underlying utilities.

4.12. Considering the potential for movement related damage to neighbours, the highway and utilities, an outline structural monitoring scheme with appropriate trigger values and contingency actions is recommended, to demonstrate control of construction and feasibility of limiting damage to within acceptable limits.

4.13. Bayham Street lies within Critical Drainage Area (Group 3-003) but is not located within a Local Flood Risk Zone. The Environment Agency indicates that the risk of flooding from surface water at 7 ABC Bayham Street is 'Very Low' however the streets adjacent to the north and south are both

at high risk (1 in 30 year) from surface water flooding. Bayham Street was not subject to surface water flooding during 1975 or 2002 events.

4.14. The development will not increase the area of hardstanding across the site. There will be no impact to the wider hydrological environment. Section 8 of the Land Stability Assessment BIA report states that given the underlying London Clay it is not feasible to install a soakaway system on site but that there 'may be requirement to attenuate surface water flows prior to discharge to the sewer. The requirement for this will be determined by Thames Water and will be designed by the appointed underground drainage engineer as necessary'. Detailed drainage design (including attenuation proposals) will require approval from LBC and Thames Water.

4.15. The proposed basement will require waterproofing and should adopt standard flood protection measures, including mitigation measures to protect against sewer surcharging.

5.0 CONCLUSIONS

5.1. The qualifications of the author for the land stability assessments have not been demonstrated in accordance with LBC guidance.

5.2. The development will comprise the demolition of the existing buildings on site and the construction of a five-storey building with a two-storey basement.

5.3. Utilities information within the zone of influence of the proposed development should be presented.

5.4. Factual site investigation information including exploratory hole records should be presented.

5.5. It is accepted there will be no impact to the local and wider hydrogeological environment. However, perched water is identified that may impact stability during construction, depending on the methodology adopted.

5.6. Options for construction sequencing and methodology are presented. Further information will be required in order to confirm impact assessments are comprehensive, as detailed in Section 4.

5.7. An outline construction programme should be presented

5.8. The GMA is not accepted, as detailed in Section 4. Additionally, Category 2 (Slight) damage is predicted to some properties, which is not allowable under LBC's policies. Consideration should also be made of impacts to the highway, including underlying utilities.

5.9. It is accepted that the site is at very low risk of flooding. Standard flood mitigation measures should be adopted.

5.10. The development will not increase the impermeable site area. It is accepted there will be no impact to the hydrological environment.

5.11. Queries and matters requiring further information or clarification are summarised in Appendix 2. Until the additional information requested has been provided, the requirements of CPG Basements have not been met.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

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Audit Query Tracker

Query No	Subject	Query	Status/Response	Date closed out
1	BIA	Author qualifications to be demonstrated.	Open	
2	BIA	Utilities information within the zone of influence of the proposed development should be presented.	Open	
3	BIA	All appendices of the Site Investigation (including borehole logs) to be provided.	Open	
4	BIA	An outline construction programme should be presented.	Open	
5	Land Stability	Geotechnical information and construction methodology information should be clarified	Open – to be provided as 4.6, 4.8 and 4.9	
6	Land Stability	GMA and associated calculations / assessments / specifications to be reviewed and re-submitted	Open – to be provided as 4.11 and 4.12	

Appendix 3: Supplementary Supporting Documents

None

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