

70-86 Royal College Street,
NW1 0TH

Basement Impact Assessment
Audit

For
London Borough of Camden

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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 70-86 Royal College Street, NW1 0TH (planning reference 2020/0728/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 RSK Environmental Limited, and the Structural Methodology Statement (SMS) has been prepared by Heyne Tillett Steel, using individuals who possess suitable qualifications. However, the qualification of the author/reviewer for the Flood Risk Assessment report is not included.
- 1.5. The BIA has confirmed that the internal basement raft slab and the perimeter secant piled wall will be founded on London Clay. This is not reflected in the GMA. The documents should be consistent.
- 1.6. The BIA has confirmed that the proposed basement will be founded on London Clay. London Clay, or materials derived from it, are present below a variable and locally thin mantle of Made Ground. Perched water is present in Made Ground.
- 1.7. The response to screening questions in the BIA for impacts to hydrogeology and land stability require updating. Despite the incorrect responses regarding the River Fleet, it is accepted there is no impact on the wider hydrogeology of the area. It is also accepted there are no hydrological impacts.
- 1.8. Further information regarding the adjacent basements, inclusive of their extent and depth, should be included in the BIA.
- 1.9. The ground movement assessment should be updated to consider the loading on the perimeter piled wall. If necessary, it should be revised to consider a secant piled wall. Soil stiffness parameters should be included in the BIA for retaining wall design.
- 1.10. No proposals are provided for a movement monitoring strategy during excavation and construction.
- 1.11. Queries and requests for further information are summarised in Appendix 2. Until these are addressed, the BIA does not meet the requirements of CPG: Basements.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 11 March 2020 to carry out a Category C Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 70-86 Royal College Street, NW1 0TH (Planning application reference: 2020/0728/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. 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 *"Demolition of existing buildings (Class B2); Erection of 5 storey building (plus rooftop pavilions/plant and basement) to provide a healthcare facility (mixed use Class D1/C2)"*.

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

- Design and Access Statement dated February 2020, prepared by Ian Chalk Architects;
- Structural Methodology Statement dated January 2020, prepared by Heyne Tillett Steel. This document includes the following relevant information:

Structural Drawings

Historic Maps

Thames Water Asset Search, dated March 2019;

Ground Investigation Report dated January 2020, prepared by RSK Environmental Ltd;

Basement Impact Assessment dated January 2020, prepared by RSK Environmental Ltd;

Flood Risk Assessment and SuDs Strategy Report dated January 2020, prepared by Heyne Tillett Steel.

- Arboricultural Report dated January 2020, prepared by Challice Consulting Ltd.
- Planning Application Drawings consisting of:
 - Existing Drawings (Drawing no. 1485_00(00)001,002,100-102, 130, 160-162,165);
 - Proposed Drawings (Drawing no. 1485_00(00)011,012,198-206, 230-232, 260-265, 270-277, 300, 301).

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	The qualifications of the individuals involved in the production of the Flood Risk Assessment are not included.
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 plan/maps included?	Yes	However, though not within the site boundary, it is noted that the exact location of the 'lost' river Fleet has not been determined.
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?	No	Responses to Questions 5, 6, 8 and 13 require revision.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	The response to Question 2, should be 'Yes' due to the presence of former River Fleet. This matter should be carried through to scoping in the BIA, although it is noted Section 2 of the SMS states that the historic river is culverted and there will be no impact.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	However, qualifications of authors to be confirmed.
Is a conceptual model presented?	Yes	Refer Section 11.3 of the GIR and Section 2.3 of the SMS.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	To be confirmed when responses to screening exercise reviewed and, where necessary, updated.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	No	Impact of nearby former course of River Fleet to be considered.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	NA	
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	Yes	
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?	No	It is stated that the Grand Lion Pub may have a 3m basement. Due to the extent of the proposed works, a confirmation is required regarding the depth and extent of the adjacent basement(s).
Is a geotechnical interpretation presented?	Yes	
Does the geotechnical interpretation include information on retaining wall design?	Yes	However, missing E (stiffness parameters).
Are reports on other investigations required by screening and scoping presented?	Yes	Draft Construction Management Plan, Arboricultural Report, Ground Movement/Building Damage Assessment, Flood Risk Assessment, and SuDs strategy report included.
Are the baseline conditions described, based on the GSD?	Yes	

Item	Yes/No/NA	Comment
Do the base line conditions consider adjacent or nearby basements?	Yes	Although the presence of basements to the pub and Royal Mail building are mentioned, the depth and extent are not provided.
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	Yes	
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	No	To be confirmed once responses to screening questions have been reviewed and, where necessary, updated.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	A movement monitoring strategy with trigger levels for the adjacent structures not included. Requirement for dewatering for the basement excavation, based on the piled retaining wall proposed, to be confirmed.
Has the need for monitoring during construction been considered?	No	
Have the residual (after mitigation) impacts been clearly identified?	NA	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	The GMA considers a contiguous piled wall while the Structural Method Statement refers to a secant piled wall. It should be confirmed that Thames Water are satisfied with the predicted impact due to ground movements on the culvert beneath Royal College Street.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Proximity of former course of River Fleet to be considered in scoping although it is noted that the BIA concludes there is no impact.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	

Item	Yes/No/NA	Comment
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	Damage category limited to Category 1 on Burland Scale. Retaining wall type in GMA should correspond with Structural Method Statement.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) and Ground Investigation Report (GIR) have been carried out by RSK Environmental Limited and are contained within the Structural Methodology Statement (SMS) prepared by Heyne Tillett Steel. The individuals concerned in its production have suitable qualifications as required by the CPG. The Flood Risk Assessment and SuDs Strategy Report was also prepared by Heyne Tillett Steel, however, the qualification of the individuals involved in its production, and their proof of expertise in engineering hydrology, are not included and are required.
- 4.2. It is proposed to demolish an existing garage on site, and construct a five-storey superstructure with a lower ground floor, and a basement over an approximate area of 60m by 18m. It is stated that c.8m of excavation will be required across the site to facilitate the proposed basement construction.
- 4.3. It is stated that the proposed basement will be founded on London Clay. A ground investigation has identified that the site is underlain by Made Ground up to a maximum depth of 3.40m bgl, followed by London Clay. Elsewhere reworked London Clay is recorded over in situ London Clay. Perched water was recorded in Made Ground during monitoring at a minimum depth of 2.69m bgl.
- 4.4. The SMS states that the basement construction is proposed as a load bearing propped secant piled wall along the perimeter, with a basement raft slab, supporting the internal columns. However, the BIA states that a contiguous bored pile wall (with temporary propping) will be constructed. The GIR advises that a compressible medium is placed beneath the basement slab to accommodate heave. The description of the structural proposal should be consistent across the reports.
- 4.5. The screening for impacts to subterranean flows incorrectly states that there are no water courses within 100m of the site whilst elsewhere in the BIA it is noted that the former course of the River Fleet runs close to the site. The screening question within BIA should be answered correctly and carried through to scoping although it is noted that Section 2 of the SMS states that the matter was considered, and that there will be no impact.
- 4.6. It is noted that perched water is present on site. The requirement of dewatering during excavation will depend on the type of perimeter wall (secant/contiguous) proposed. Confirmation is hence requested.
- 4.7. The site is located in Flood Zone 1. The proposed development will not lead to change in the hard-standing area on site. A Flood Risk Assessment and SuDs strategy report has been provided. However, the qualification of the individuals involved in its production are not included. Until this is provided and found to be satisfactory as per CPG, the assessment cannot be accepted. It is noted that a blue roof is proposed in order to restrict flows to the sewer.

- 4.8. It is accepted that the site is situated within a generally flat setting and it is stated that re-profiling and landscaping is not proposed.
- 4.9. The land stability screening is incorrect in relation to the felling of trees and the proximity of a former river. The screening notes that the London Clay is not the shallowest stratum but should consider the fact that the overlying stratum (reworked London Clay) is derived from it. These questions should be reviewed and any associated potential impacts assessed. The screening exercise notes the presence of worked ground and the adjacent highway and both are addressed in the subsequent assessment.
- 4.10. Response to Question 13 of the screening states that there is no increase in differential depth between foundations as a result of the basement proposals. The excavation depth for the proposed basement is reported to be around 8m while the depth of the basement to the Grand Lion pub is 'believed to be' 3m. The response to this question should be corrected, although it is noted that a ground movement/building damage assessment for the adjacent pub has been undertaken. Evidence to support the presence and extent of a basement beneath the Royal Mail building and Grand Lion Pub should be provided.
- 4.11. A Ground Movement Assessment has been undertaken assuming a contiguous bored pile retaining wall with high stiffness achieved by propping arrangement. The ground movement assessment has also considered structural impacts to surrounding buildings. It is stated that the impact shall be within Category 1 on the Burland Scale. However, the nature of the retaining wall should be revised to correspond with the structural engineering information. The GMA also considers the impact to Royal College Street (Highway Assessment) and to the Thames Water brick trunk sewer running beneath the Royal College Street. It should be confirmed that Thames Water are satisfied that the impact of the predicted movement is acceptable.
- 4.12. The ground movement assessment does not include assessment of ground movements (settlements) produced due to loading on the piled perimeter wall. It is recommended that the long-term ground movements produced as a result of structural loading on the piles be included and the assessment be updated.
- 4.13. The GIR provides a geotechnical interpretation and soil parameters that may be used in the design of the basement retaining walls. However, stiffness parameters (E) to allow the design of the retaining walls should be included.
- 4.14. No proposals are provided for a movement monitoring strategy during excavation and construction.

5.0 CONCLUSIONS

- 5.1. The BIA and SMS has been carried out by individuals of suitable qualification. The qualification of the individuals involved in the production of FRA is requested.
- 5.2. The BIA has confirmed that the proposed basement will be founded on London Clay. London Clay, or materials derived from it, are present below a variable and locally thin mantle of Made Ground.
- 5.3. Perched water is present in Made Ground. Groundwater encounter and subsequent requirement for dewatering during excavation will depend on the proposed perimeter piled wall. Confirmation is required whether this shall be secant/contiguous. The reports are to be made consistent to reflect the same form of construction with respect to the retaining walls and basement slab.
- 5.4. The response to screening questions in the BIA for impacts to hydrogeology and stability, and subsequent scoping, should be updated with regard to the historic River Fleet. The land stability screening and scoping should be updated to reflect the proposed felling of trees, the presence of London Clay and the differential depth that will be created between adjacent foundations by the basement proposals.
- 5.5. Further information regarding the adjacent basements, inclusive of their extent and depth, should be included in the BIA.
- 5.6. The ground movement assessment should be updated to include ground movements produced as a result of loading on the perimeter piled wall. If necessary, it should be revised to consider a secant piled wall. Soil stiffness parameters should be included in the BIA for retaining wall design.
- 5.7. No proposals are provided for a movement monitoring strategy during excavation and construction.
- 5.8. Despite the incorrect response to the screening questions regarding the River Fleet, it is accepted that the development will not impact on the wider hydrogeology of the area. It is accepted the site is not in an area subject to flooding and there are no hydrological impacts.
- 5.9. Queries and requests for further information are summarised in Appendix 2. Until these are addressed the BIA does not meet the requirements of CPG: Basements.

Appendix 1: Residents' Consultation Comments

No relevant comments

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	Confirmation required on the type of perimeter wall adopted for the proposal (secant/contiguous) and basement slab. Soil stiffness parameter to be included.	Open	
2	Hydrogeology	Response to Subterranean groundwater screening question 2 to be updated to consider 'lost' River Fleet. The same applies to Question 8 of Land Stability screening.	Open	
3	Hydrology	Qualification of the authors/reviewers of the FRA is requested.	Open	
4	Land stability	Screening exercise to be updated to reflect tree removal, presence of London Clay and differential foundation depths.		
5	Land Stability	GMA to be updated to included settlements produced due to load induced on the perimeter wall. Revision may be required to consider secant piled wall.	Open	
6	Land Stability	GMA and BIA to be updated to include evidence on the depth and extent of adjacent basement(s).	Open	
7	Land Stability	Movement monitoring strategy with trigger levels are requested based on updated GMA.	Open	

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