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34 Meadowbank
London, NW3 3AY

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 13693-40
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 34 Meadowbank (planning reference 2021/6074/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 (BIA) 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 construction of a single-level basement beneath the existing building, extending into the rear patio area. A ground floor rear extension is also proposed above this.

1.5. The qualifications of the individuals involved in the production of the BIA are in line with Camden's guidance.

1.6. Confirmation of the proposed formation level should be included in the BIA.

1.7. Screening and scoping assessments are presented, supported by desk study information. However, an impact assessment on the proposed decrease in hardstanding area should be presented in the BIA, including proposed drainage arrangements.

1.8. The site investigation confirmed that the basement will be founded in the London Clay. Groundwater is not expected to be encountered during construction.

1.9. Geotechnical parameters are presented. However, indication of the angle of shearing resistance of the Made Ground for retaining wall design is not presented and is required.

1.10. Preliminary retaining wall calculations are presented in the BIA. However, the ground model adopted in the calculations and the height of the retaining wall assumed should be reviewed.

1.11. Values for the undrained and drained modulus assumed in the Ground Movement Assessment are significantly different from the ones used in the Geotechnical Assessment Report. Clarification on how those parameters have been derived should be presented and the GMA revised, as required.

1.12. Queries and requests or information are discussed in Section 4 and summarised in Appendix 2. Until the clarifications requested are presented, the BIA does not meet the requirements of Camden Planning Guidance: Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on the 3rd of February 2022 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 34 Meadowbank, London, NW3 3AY, planning reference 2021/6074/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:

- Camden Local Plan 2017 - Policy A5 Basements.
- Camden Planning Guidance (CPG): Basements. January 2021.
- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.

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 *"Excavation of basement with rooflight to front, erection of a ground floor rear extension and replacement windows and doors."*.

2.6. CampbellReith accessed LBC's Planning Portal on the 4th of March 2022 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment by Michael Alexander Consulting Engineers, ref: P5162 Issue 1.0, dated 02 December 2021.
- Basic Geotechnical Assessment Report by Jomas Associates Ltd, ref: P3912J2401/JWT, dated 18 November 2021.
- Ground Movement Assessment by Jomas Associates Ltd, ref: P3912J2401/JWT, dated 26 November 2021.
- Design and Access Statement by PATALAB Architecture, ref: unknown reference.
- Architectural Drawings by PATALAB Architecture including existing and proposed plans and sections.
- Planning Consultation Responses as detailed in Appendix 1.

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	
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	Screening section of the BIA.
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	Section 4.01 of the BIA. However, further clarification is required.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 3.01 of the BIA.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 5.01 of the BIA. However, further clarification is required.
Is a conceptual model presented?	Yes	Section 4 of the GI report.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 4.02 of the BIA.

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	No	Section 3.02 of the BIA. Q4 has been answered 'No' although the text indicates there will be a change in impermeable site area to be assessed.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	Section 5.02 of the BIA. Q3 has been answered as 'Yes', however an impact assessment has not been presented.
Is factual ground investigation data provided?	Yes	See Report on Ground Investigation.
Is monitoring data presented?	Yes	Section 4.4 of the Report on Ground Investigation.
Is the ground investigation informed by a desk study?	Yes	Section 2.0 of the Report on Ground Investigation.
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Section 2.3 of the Report on Ground Investigation.
Is a geotechnical interpretation presented?	Yes	Section 4.7 of the Report on Ground Investigation. Noted that the stated allowable bearing capacity of the soil would likely result in unacceptable ground movements. However, structural loads result in significantly lower bearing pressures being applied.
Does the geotechnical interpretation include information on retaining wall design?	No	A value for the friction angle for the Made Ground has not been presented and is required.
Are reports on other investigations required by screening and scoping presented?	Yes	GMA and Report on Ground Investigation are provided.
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	Section 4.01 of the BIA.

Item	Yes/No/NA	Comment
Is an Impact Assessment provided?	Yes	Assessment of increase in permeable site area to be stated.
Are estimates of ground movement and structural impact presented?	Yes	GMA and outline structural proposal provided, clarifications requested.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	Assessment of increase in permeable site area to be stated.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	TBC following clarifications / review
Has the need for monitoring during construction been considered?	Yes	Section 4.04 of the BIA and Section 5 of the GMA.
Have the residual (after mitigation) impacts been clearly identified?	No	Residual impact are considered to be negligible. TBC following clarifications / review.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Structural calculations to be reviewed. Clarification on geotechnical parameters adopted in the BIA is required.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	Assessment of increase in permeable site area to be stated.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	As above.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	However the GMA may need to be revised.
Are non-technical summaries provided	Yes	Executive Summary of the BIA.

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by Michael Alexander Limited with contributions from Jomas Associates Ltd, and the qualifications of the individuals involved in the production of the BIA meet the requirements of CPG Basements.

4.2. The site is occupied by a three-storey mid-terraced dwelling house with dormer extension to the roof space. The property is bound by residential houses to either side, as part of a terrace and there is a paved area leading to a large communal garden to the rear. Meadowbank runs in a northwest-southeast direction to the front of the property. The building shares party walls with No. 33 and No. 35 Meadowbank which are understood not to have basements. The property is neither listed nor in a conservation area.

4.3. The proposed development comprises the construction of a single-level basement beneath the existing building, extending into the rear patio area. A ground floor rear extension is also proposed above this. From the architect's drawings and Ground Movement Assessment it is understood that the basement will be c. 3.40m deep. Confirmation of the proposed excavation depth and indication of the proposed formation level should be included in the BIA.

4.4. Screening and scoping assessments are presented and informed by desk study information. Most relevant figures/maps from the ARUP GSD and other guidance documents are referenced within the BIA to support responses to screening questions.

4.5. Question 3 of the surface flow and flooding screening and Question 4 of the groundwater flow screening indicates that there will be a decrease in the proportion of paved external areas as some of the existing hardstanding areas will be replaced by landscaping. Question 5 of the groundwater flow screening indicates that surface water will continue to be discharged to the communal gardens; however, the increase in permeable site area is not considered. The proposed drainage arrangements should be confirmed, and any increased discharge to ground should be taken to scoping and impacts assessed. The BIA should confirm that the proposals are unlikely to cause wider significant changes to the local groundwater and surface water flow regimes.

4.6. The site has a very low to low risk of flooding from surface water, water from rivers or the sea and reservoirs. As 4.5, currently surface water from the site is discharged to the ground in the communal garden area and into the public sewer and the proposed drainage arrangements should be confirmed.

4.7. A site investigation was undertaken by Jomas Associates Ltd in November 2021. Site works comprised one exploratory borehole to a maximum depth of 8.45m below ground level (bgl) and hand dug trial pits to a maximum depth of 0.90m bgl. Made Ground of between 0.70m to 1.80m thick was found overlying Head Deposits, which were encountered to a depth of 2.00m bgl, overlying deposits of the London Clay Formation (where the basement will be founded) to the bottom of the boreholes. The hand pits proved the base of existing foundation to be at between 0.65 and 0.85m bgl at the rear of the property. Its noted that the borehole and hand pit to the front of the property could not be progressed due to obstructions and it would be prudent for ground conditions at the front of the property to be confirmed prior to construction.

4.8. Groundwater was not encountered during the investigation. On one return monitoring visit, groundwater was observed at c. 6.40m bgl, which is below proposed basement level. The BIA attributes the monitored water level to seepages remaining trapped at the base of the borehole rather than reflective of a groundwater body.

4.9. Most of the geotechnical parameters to be adopted in the basement design and ground movement calculations are presented in the BIA. However, indication of the angle of shearing

resistance of the Made Ground for retaining wall design is not presented and is required. Its noted that the stated allowable bearing capacity at 3.50m bgl would likely result in higher than acceptable ground movements if fully utilised. However, the structural loads presented result in significantly lower bearing pressures, which have been assessed as part of the Ground Movement Assessment (GMA).

4.10. An outline structural proposal is included in the BIA. Underpinning below the existing perimeter wall (including party walls to No. 33 and 35 Meadowbank) is proposed to form the new basement. The underpinning is to be carried out in stages and not exceeding 1.2m in length for any individual pin. The BIA states that the appointed contractor will be responsible for a detailed underpinning method statement and proposals for temporary propping of the underpins.

4.11. Preliminary retaining wall calculations are presented in the BIA. However it is stated that London Clay is assumed across the site, from ground level. This is incorrect and a correct ground profile along with associated geotechnical parameters should be adopted in the calculations. A height of 2.80m for the underpin is assumed in the calculations. This is in contrast to the height indicated in the structural drawings (see 4.3.) and should be clarified.

4.12. A GMA and damage assessment are provided to demonstrate that ground movements and consequential damage to neighbouring properties will be within the LBC's policy requirements. The analysis was carried out using the Oasys programme XDisp and PDisp.

4.13. Values for the undrained and drained modulus assumed in the GMA are significantly different from the ones used in the Geotechnical Assessment report. Clarification on how those parameters have been derived is required and the GMA should be revised, as required.

4.14. Ground movements calculated in the GMA are between 5 and 10mm in both the horizontal and vertical direction. The result of the preliminary damage assessment confirms that damage to neighbouring properties will be within Category 1 in accordance with the Burland Scale. However, the GMA may need to be revised as per 4.11 and 4.13.

4.15. The GMA recommends a project specific monitoring regime and Action Plan to be put in place, which will delineate lines of responsibility, monitor trigger levels and appropriate mitigation measures.

5.0 CONCLUSIONS

5.1. The qualifications of the individuals involved in the production of the BIA are in line with Camden's guidance.

5.2. An impact assessment on the proposed decrease in hardstanding area should be presented, including confirmation of drainage arrangements.

5.3. The site investigation confirmed that the basement will be founded in the London Clay. Gorundwater is not expected to be encountered during construction.

5.4. Geotechnical parameters should include the angle of shearing resistance of the Made Ground for retaining wall design.

5.5. The ground model adopted in the retaining wall calculations and the height of the underpin assumed should be reviewed.

5.6. Clarifications to the GMA should be presented, as detailed in Section 4.

5.7. Queries and requests for information are summarised in Appendix 2. Until the clarifications requested are presented, the BIA does not meet the requirements of Camden Planning Guidance: Basements.

Appendix 1: Residents' Consultation Comment

Residents' Consultation Comments

Only residents' consultation comments relevant to this audit have been considered and are discussed as follows:

Surname	Address	Date	Issue raised	Response
Shamash	33 Meadowbank	23/12/2021	Structural integrity concerns Flooding concerns	See Section 4.11. – 4.15. See Section 4.5. – 4.6.
Delaney	36 Meadowbank	02/01/2022	Structural integrity concerns	See Section 4.11. – 4.15.
Moody	Meadowbank	20/01/2022	Flooding concerns	See Section 4.5. – 4.6.
Scott	Unknown	10/02/2022	Flooding concerns	See Section 4.5. – 4.6.
Brace	27 Meadowbank	21/12/2022	Flooding concerns	See Section 4.5. – 4.6.
Filer	Unknown	26/01/2022	Flooding concerns	See Section 4.5. – 4.6.
De'	24 Meadowbank	10/01/2022	Structural integrity concerns Flooding concerns	See Section 4.11. – 4.15. See Section 4.5. – 4.6.
Hollis	Unknown	29/01/2022	Structural integrity concerns Flooding concerns	See Section 4.11. – 4.15. See Section 4.5. – 4.6.
Khanna	15 Meadowbank	08/01/2022	Flooding concerns	See Section 4.5. – 4.6.
Fenny	39 Meadowbank	17/01/2022	Flooding concerns	See Section 4.5. – 4.6.

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA format	Confirmation of the maximum excavation depth and indication of formation level should be presented in the BIA.	Open – See Section 4.3.	
2	Hydrogeological/ Hydrological assessment	An impact assessment on the proposed decrease of hardstanding areas should be presented. The BIA should confirm drainage arrangements, and that any increase in discharge to ground will not result in an increase in flood risk or impacts to groundwater / surface water flow.	Open – See Section 4.5.	
3	Geotechnical interpretation	Geotechnical parameters for the Made Ground to be used in the preliminary design should be presented.	Open – See Section 4.9	
4	Structural calculations	Ground model and height of the underpin assumed in the calculations should be reviewed.	Open – See Section 4.11.	
5	GMA	To be reviewed as Section 4	Open – See Section 4.11 to 4.14	
6	Land Stability	Noted that the borehole / trial pit at the front of the property was not completed due to obstructions. It would be prudent to confirm ground conditions at the front of the property prior to construction.	Note – See Section 4.7	Note Only

Appendix 3: Supplementary Supporting Documents

None

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