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14 Eton Road, Primrose Hill NW3 4SS

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 14 Eton Road, Primrose Hill, NW3 4SS (planning reference 2017/5616/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 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. Considering the individual assessments within the supporting documents, the BIA has been prepared using individuals who possess suitable qualifications.

1.5. The BIA has confirmed that the proposed lower ground floor, at the main house and the garden room, will be founded within the London Clay formation which was encountered from a depth of 0.75m at the site beneath a layer of Made Ground.

1.6. It is unlikely that the ground water table will be encountered during basement foundation excavation. There will be no impacts to the wider hydrogeological environment.

1.7. Although the foundation solution is inconsistently described within the BIA and supporting documents, this audit has considered that the lower ground floor will be constructed by underpinning, with a maximum excavation depth of 1.7m from current ground level.

1.8. Investigation of the below ground soils and neighbouring foundations has been carried out, and this along with the groundwater monitoring undertaken is considered sufficient to inform construction methodology.

1.9. Two trees are to be felled as part of the development. The BIA states that the foundations will be placed at least 1.00m below final ground level in order to avoid the zone affected by seasonal moisture content changes and relevant NHBC guidance should be followed.

1.10. A ground movement assessment (GMA) has been undertaken which indicates damage to neighbours of Category 0 (Negligible). Considering the limited depth of excavation and assuming good workmanship, this is accepted.

1.11. The BIA recommends that a structural monitoring strategy is implemented during the works and states that movements should be limited to a maximum of 5mm. This should be undertaken.

1.12. There will be an increase in permeable site area, as the proposal includes a green roof on the Garden Room. There will be no impacts to the wider hydrological environment.

1.13. Further discussion of the proposed development is provided within Section 4. The BIA is considered to meet the requirements of CPG4.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 30th November 2017 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 14 Eton Road, Primrose Hill NW3 4SS and Reference 2017/5616/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) 4: Basements and Lightwells.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.
- 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;

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 a garden studio to the rear elevation with green roof, following the demolition of the existing, excavation at lower-ground floor level for a basement extension, installation external staircase between lower and upper-ground floors, erection of a single storey extension to the flank elevation with green roof, installation of metal balustrade for a terrace at upper-ground floor level, erection of bin and*

cycle storage and hard and soft landscaping to the front elevation all associated with the use as residential dwelling (Class C3)."

2.6. CampbellReith accessed LBC's Planning Portal on 11 December 2017 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment (BIA) ref. 17/27107-2, by Site Analytical Services Ltd., dated September 2017;
- Basement Impact Assessment Statement ref. 00828 by StructureMode, dated 26th September 2017;
- Geotechnical Desk Study ref. 17/27107, by Site Analytical Services Ltd., dated September 2017;
- Ground Movement Assessment ref. 122183/R0 (included in Bore Survey), by Fairhurst, dated 13 September 2017;
- Planning and Heritage Statement ref. P1411, by ECE Planning, dated September 2017;
- Construction Management Plan by ADL Planning Ltd. ref. ADL/14ETR/APX_C1 rev. C, dated July 2017;
- Planning Application Drawings by Undercover Architecture Ltd. dated September 2017, consisting of:
  - Site Location Plan
  - Existing Plans
  - Demolition Plans
  - Proposed Plans
- Construction Management Plan, Camden Council Proforma completed by ADL Planning, dated 25 September 2017;
- Rodent Survey ref. 9216071, by JG Pest Control, dated 30 June 2017;
- Arboricultural Report and Plan ref. ARB/3604/Y/200, by ACS Consulting, dated June 2017.

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	
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	
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Is a conceptual model presented?	Yes	Described within assessments.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	

Item	Yes/No/NA	Comment
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	Yes	The BIA recommends more groundwater monitoring.
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	No information on existing nearby basements is provided. For stability assessments, assumed foundation depths of 0.5m bgl are considered conservative. No cumulative hydrogeological impacts to consider.
Is a geotechnical interpretation presented?	Yes	Within GMA and associated appendices
Does the geotechnical interpretation include information on retaining wall design?	No	Whilst geotechnical parameters for retaining wall are not stated, the BIA demonstrates the founding stratum will be stiff and provides insitu shear strength data. The GMA has adopted conservative stiffness values and confirms foundation widths will be adequate for the structural loads.
Are reports on other investigations required by screening and scoping presented?	Yes	Arboricultural survey included.
Are the baseline conditions described, based on the GSD?	No	No information on existing nearby basements is provided. Assessments accepted (as above).
Do the base line conditions consider adjacent or nearby basements?	No	No information on existing nearby basements is provided. Assessments accepted (as above).

Item	Yes/No/NA	Comment
Is an Impact Assessment provided?	Yes	Via the scoping process and GMA.
Are estimates of ground movement and structural impact presented?	Yes	
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Structural monitoring to be undertaken; movements to be limited to a maximum of 5mm.
Has the need for monitoring during construction been considered?	Yes	Structural monitoring to be undertaken; movements to be limited to a maximum of 5mm.
Have the residual (after mitigation) impacts been clearly identified?	Yes	The GMA indicates Category 0 (negligible) damage to neighbours.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	
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	
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by Site Analytical Services Limited, with supporting documents by StructureMode, Fairhurst, ACS Consulting, Undercover Architetcts, ADL Planning and ECE Planning. Considering the individual assessments within the supporting documents, the BIA has been prepared using individuals who possess suitable qualifications.

4.2. The proposed basement consists of a single storey construction formed by demolishing an existing Garden Room separate to and at the rear of the property, and re-constructing it with the lower ground floor lowered by 1.5 metres below ground level (bgl), although garden level itself will also be lowered by approximately 0.7m. The proposal for the main building at the development site includes changing the internal layout of the existing lower ground floor area, with an extension of this area to the west of the building into what is currently an alley at the side of the building. There are no plans to lower the existing ground floor in this area.

4.3. The BIA has identified that the ground conditions beneath the site comprise of Made Ground to a maximum depth of 0.75 metres below which lies the London Clay Formation to at least 6.0m bgl, the full depth of exploration.

4.4. The site investigation described and reported in the BIA is considered sufficient to inform the design. Further groundwater monitoring is recommended by the BIA, prior to construction. However, it is accepted that any groundwater encountered is perched and will not impact the wider hydrogeological environment.

4.5. Although the foundation solution is inconsistently described within the BIA and supporting documents, this audit has considered that the lower ground floor will be constructed by underpinning, with a maximum excavation depth of 1.7m from current ground level. The BIA Statement describes the proposal as reinforced concrete retaining walls with mass concrete strip foundations.

4.6. The proposal includes felling of two trees at the property. Evidence of desiccation was not found during the Ground Investigation. The BIA states that the foundations will be placed at least 1.00m below final ground level in order to avoid the zone affected by seasonal moisture content changes. The BIA recommends that relevant guidance, NHBC Chapter 4.2, is followed.

4.7. Whilst geotechnical parameters for retaining walls are not stated, the BIA demonstrates the founding stratum will be stiff London Clay and provides insitu shear strength data. The GMA has adopted conservative stiffness values and confirms foundation widths will be adequate for the structural loads.

4.8. The GMA calculations and conclusions rely heavily on data from an earlier site investigation, carried out in 2013. However, only the undrained shear strength profile is submitted for review. If this information is to be relied upon, the full Site Investigation report with laboratory testing results is required for review.

4.9. Assessment of vertical and horizontal ground movements has been produced in the GMA for the Garden Room, and results indicate potential damage to adjoining properties of Category 0 (Negligible). The GMA uses CIRIA C580 to predict ground movements resulting from underpinning. Whilst the CIRIA approach is intended for embedded retaining walls, we accept that predicted ground movements are typically within the range anticipated for underpinning techniques carried out with good control of workmanship. Considering the limited depth of excavation in this instance, the assessment is accepted.

4.10. The BIA recommends that a structural monitoring strategy is implemented during the works and states that movements should be limited to a maximum of 5mm. This should be undertaken.

4.11. There will be an increase in permeable site area, as the proposal includes a green roof on the Garden Room. There will be no impacts to the wider hydrological environment.

4.12. It is accepted that there are no slope stability concerns regarding the proposed development and it is not in an area prone to flooding.

4.13. Information is provided showing that London Underground do not have any tunnels or sensitive infrastructure within 50m of the site. Existing drainage within the site has been identified. No other sensitive utilities or infrastructure have been identified and this should be confirmed prior to construction.

5.0 CONCLUSIONS

5.1. The BIA has been prepared using individuals who possess suitable qualifications.

5.2. The BIA confirms that the proposed lower ground floor will be founded within the London Clay formation. The lower ground floor will be constructed by underpinning, with a maximum excavation depth of 1.7m from current ground level.

5.3. There will be no impacts to the wider hydrogeological environment.

5.4. There will be an increase in permeable site area. There will be no impacts to the wider hydrological environment.

5.5. A ground movement assessment (GMA) has been undertaken which indicates damage to neighbours of Category 0 (Negligible). Considering the limited depth of excavation and assuming good workmanship, this is accepted.

5.6. The BIA recommends that a structural monitoring strategy is implemented during the works and states that movements should be limited to a maximum of 5mm. This should be undertaken.

5.7. The BIA is considered to meet the requirements of CPG4.

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Appendix 1: Residents' Consultation Comments

None

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Appendix 2: Audit Query Tracker

None

Appendix 3: Supplementary Supporting Documents

None

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