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13 Glenmore Road, London, NW3 4BY

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12466-66
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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 13 Glenmore Road, NW3 4BY (planning reference 2016/6510/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. The qualifications of the authors are in compliance with the requirements set out in CPG4.

1.5. Relevant information screening and scoping as defined and required in the LBC Planning Guidance document 'Basement and Lightwells (CPG4)' has been provided.

1.6. It is proposed to construct the new basement and lightwell and to lower the existing cellar using traditional 'hit and miss' underpinning techniques. The perimeter walls and underpins are to be laterally propped, allowing basement excavation and reinforced concrete basement slab and walls to be constructed.

1.7. The basement will be founded in London Clay. The GI notes that it is likely that the clays in the upper 1.0-2.0m bgl are desiccated and within the zone of influence of the existing mature trees. The proposed foundation depth of 3.5m bgl is below this zone of influence. The BIA states that the property exhibits no signs of excessive deformations or cracking or any evidence of shrink/swell subsidence in the area.

1.8. The Tree Survey states that one tree to the rear of the property is to be removed and replace with 2no. smaller trees to facilitate construction, however the screening section of the BIA states that no trees are felled as parted of the proposal. This should be clarified.

1.9. The BIA states that heave protection will be provided beneath the basement slab to remediate the effects of Long - term heave in the London Clay.

1.10. The BIA confirms that no groundwater strikes were recorded during the ground investigations and that groundwater was not recording during monitoring visits.

1.11. The basement construction sequence has been described in detail within the BIA. The proposal explains clearly the construction sequence, temporary propping requirements and the

importance of the contractors' temporary works method statements in order to construct a robust structure without significant adverse impacts on adjoining properties.

1.12. The property is bounded by the First Floor Flat within 13 Glenmore Road and shares a Party Wall with Nos. 11 and 15 Glenmore Road.

1.13. The BIA confirms that the neighbouring properties have a similar basement and lightwell to the front of the property. A Ground Movement Assessment has been undertaken to assess the damage category to the neighbouring properties.

1.14. The BIA identifies that the public highways to the front of the property is within 5m from the proposed development. This should be considered in the GMA as noted in the BIA.

1.15. The GMA provides an assessment of vertical and horizontal ground movements and indicates the potential damage to neighbouring properties as no higher than Category 1 on the Burland scale, 'Very Slight Damage'. Temporary works propping and sequencing proposals are provided. Assuming that the works are carefully controlled and monitored, the proposed development's impacts are acceptable and in accordance with CPG4.

1.16. A monitoring strategy during excavation and construction is provided.

1.17. It is accepted that the proposed basement construction will not impact on the wider hydrogeology of the area and is not in an area subject to flooding.

1.18. It is accepted that the surrounding slopes to the development site are stable.

1.19. Queries and requests for clarification are described in Section 4 and summarised in Appendix 2. Assuming that further investigation and assessment is undertaken prior to construction, as recommended in the BIA, the criteria of CPG4 and DP27 have been met.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 22/12/2016 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 13 Glenmore Road, NW3 4BY, 2016/6510/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.

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 *"Extension at basement level, excavation to existing front lightwell, alterations at rear elevation and installation of 1x rooflight to ground floor flat"*

The Audit Instruction also confirmed 13 Glenmore Road is not a listed building, or is not a neighbour to, listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal on 10/04/2017 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA) by Symmetrys Limited
- BIA - Appendix A - Proposed Drawings by Symmetrys Limited November 2016
- BIA - Appendix B - Structural calculations by Symmetrys Limited October 2016
- BIA - Appendix C - Site Investigations by Geosolutions Ltd October 2016
- BIA - Appendix D - Ground Movement Assessment by Chelmer November 2016
- BIA - Appendix E - Flood Risk Assessment-Part 1 by GeoSmart September 2016
- BIA - Appendix E - Flood Risk Assessment-Part 2
- BIA - Appendix E - Flood Risk Assessment-Part 3
- BIA - Appendix E - Flood Risk Assessment-Part 4
- BIA - Appendix E - Flood Risk Assessment-Part 5
- BS5837 Tree Survey & Assessment by Indigo Surveys November 2016
- Construction Method Statement by IMKO November 2016
- Design and Access Statement by AR-Architecture Ltd
- Planning Application Drawings consisting of

  P000 - Location Plan AR-Architecture November 2016

  P010 - Existing Plans AR-Architecture November 2016

  P020 - Existing Section A-A AR-Architecture November 2016

  P021 - Existing Section B-B AR-Architecture November 2016

  P030 - Existing Elevations AR-Architecture November 2016

  P100 - Demolition Plans AR-Architecture November 2016

  P110 Revised Demolition Section A-A AR-Architecture November 2016

  P111 Revised Demolition Section B-B AR-Architecture November 2016

  P200 Revised Proposed Plans AR-Architecture November 2016

  P210 Revised Proposed Section A-A AR-Architecture November 2016

  P211 Revised Proposed Section B-B AR-Architecture November 2016

  P212 Revised Proposed Section C-C, D-D and E-E AR-Architecture November 2016

  P220 Revised Proposed Elevation AR-Architecture November 2016

- There were no Planning Comments

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	
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
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?	Yes	
Is a geotechnical interpretation presented?	Yes	
Does the geotechnical interpretation include information on retaining wall design?	Yes	
Are reports on other investigations required by screening and scoping presented?	Yes	
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	No	GMA to include highway to front of property

Item	Yes/No/NA	Comment
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	
Has the need for monitoring during construction been considered?	Yes	
Have the residual (after mitigation) impacts been clearly identified?	Yes	
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 2?	Yes	
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by Symmetrys Limited, consulting structural engineers. The BIA includes a Ground Movement Assessment (GMA) carried out by Chelmer Consultancy Services, a Ground Investigation Report (GI) by LMB Geosolutions and a Flood Risk Assessment (FRA) by Geosmart. The qualifications of the author of the BIA and the associated reports are in compliance with the requirements of CPG4.

4.2. The BIA includes screening, scoping, site investigation and impact assessment stages as defined and required in the LBC Planning Guidance document 'Basements and Lightwells (CPG4)', dated July 2015.

4.3. 13 Glenmore Road is a late 20th Century three storey terrace building located on the southern side of Glenmore Road. The building is divided into two flats, this application only relates to the Ground Floor Flat, which includes the existing cellar to the front of the building. The existing structure is load bearing masonry with timber floor joists.

4.4. The LBC Instruction to proceed with the audit identified that the basement proposal did not involve or neighbour a listed building. The Design & Access Statement identified that 13 Glenmore Road is located in the Belsize Conservation Area.

4.5. The proposed works include the excavation of a new single storey basement beneath the existing ground floor footprint to a depth of approximately 3.5m, extending the depth of the existing cellar, by approximately 1m, to match the depth of the new basement and forming a new lightwell to the rear of the property. It is proposed to construct the new basement and lightwell and to lower the existing cellar by forming reinforced concrete underpins, cast in a hit and miss sequence. A new steel frame is to be constructed internally to provide support to the existing structure above and to allow for a section of the rear wall to be replaced with double height glazing, as noted on Symmetrys drawings SK01-SK06.

4.6. A GI has been undertaken at the site by LMB Geosolutions, October 2016. 2No. boreholes and 2No. foundation trial pits where carried out. The borehole to the front of the property was terminated at 0.4m due to obstructions in the ground. Due to lack of suitable locations the borehole was not carried out in an alternative location. The borehole to the rear of the property terminated at 8.45m. It identified made ground to a depth of 1.0m underlain by London Clay to the full depth of the borehole. The foundation trial pits noted a similar depth of made ground. The existing foundations are formed of a brick corbel sitting on an approx. 0.3m deep concrete footing.

4.7. The basement will be founded in London Clay which has a high shrink/swell potential. The GI notes that it is likely that the clays in the upper 1.0-2.0m bgl are desiccated and within the zone

of influence of the existing mature trees. The proposed foundation depth of 3.5m bgl is below this zone of influence. The BIA states that the property exhibits no signs of excessive deformations or cracking or any evidence of shrink/swell subsidence in the area. The Tree Survey states that one tree to the rear of the property is to be removed and replace with 2no. smaller trees to facilitate construction, however the screening section of the BIA states that no trees are felled as parted of the proposal. This should be clarified.

4.8. The BIA states that heave protection will be provided beneath the basement slab to remediate the effects of Long - term heave in the London Clay. Calculations have been provided for the basement slab which has been designed with sufficient stiffness to withstand heave pressures and transfer forces to the perimeter walls. The basement slab should also be designed to withstand the forces at the bases of the new steel internal columns .

4.9. The BIA confirms that no groundwater strikes were recorded during the ground investigations and that groundwater was not recording during monitoring visits. It is noted that the preliminary retaining wall designs provided assume the groundwater level at 1.0m bgl; this is good practice.

4.10. The proposed construction sequence is to underpin the perimeter walls, extending the foundations into the clay to a depth of approximately 3.5 metre deep. The perimeter walls and underpins are to be laterally propped, allowing basement excavation and reinforced concrete basement slab and walls to be constructed. The trial pits carried out as part of the GI indicate that the perimeter walls are typically shallow, brick spread foundations supported on concrete strip foundations. The underside of the concrete footing to the rear of the property was 0.3m below the underside of the brick footing. If it is necessary to break back the existing concrete foundations to form the new underpins a Construction Monitoring Strategy should be put in place to minimise damage to adjacent properties.

4.11. The basement construction sequence has been described in detail within the BIA. The proposal explains clearly the construction sequence, temporary propping requirements and the importance of the contractors' temporary works method statements in order to construct a robust structure without significant adverse impacts on adjoining properties.

4.12. The property is bounded by the First Floor Flat within 13 Glenmore Road and shares a Party Wall with Nos. 11 and 15 Glenmore Road.

4.13. The BIA assumes that the neighbouring properties have a similar basement and lightwell to the front of the property. There is no evidence that alterations have been made to the original basements at the neighbouring properties, 11 Glenmore Road and 15 Glenmore Road. This should be confirmed prior to construction and the GMA updated accordingly if required. A GMA has been undertaken to assess the damage category to the neighbouring properties.

4.14. The BIA identifies that the public highways to the front of the property is within 5m from the proposed development. This should be considered in the GMA.

4.15. The GMA indicates the potential damage to neighbouring properties as no higher than Category 1 on the Burland scale, 'Very Slight Damage'. Temporary works propping and sequencing proposals are provided. Assuming that the works are carefully controlled and monitored, the proposed development's impacts are acceptable and in accordance with CPG4. A monitoring strategy is proposed which should be confirmed with the Party Wall Surveyor and should be updated with any updates to the structural design and damage impact assessment, following the opening up works on site.

4.16. It is accepted that there is no increase in the hardstanding area and therefore no increased surface water runoff. It is accepted that the proposed basement construction will not impact on the wider hydrogeology of the area.

4.17. The BIA has shown that although the development is close to a tributary of a "lost" river, it will not impact on the wider hydrogeology of the area.

4.18. It is accepted that there are no slope stability concerns regarding the proposed development.

4.19. The FRA confirms that the area is not prone to flooding and that the floor risk is negligible.

5.0 CONCLUSIONS

5.1. The qualifications of the author of the BIA and the associated reports are in compliance with the requirements of CPG4.

5.2. It is proposed to construct the new basement and lightwell and to lower the existing cellar using traditional 'hit and miss' underpinning techniques. The perimeter walls and underpins are to be laterally propped, allowing for the basement excavation to be carried out and reinforced concrete basement slab and walls to be constructed.

5.3. A Ground investigation has been provided which confirms that the proposed basement will be founded within London Clay. The GI notes that it is likely that the clays in the upper 1.0-2.0m bgl are desiccated and within the zone of influence of the existing mature trees. The proposed basement depth is approximately 3.5m bgl, below the desiccated soils.

5.4. It is unlikely that the ground water table will be encountered during basement foundation excavation.

5.5. It is noted that the preliminary retaining wall designs provided assume the groundwater level at 1.0m below ground level; this is good practice.

5.6. The BIA considers that heave protection measures will be provided beneath the basement slab to remediate the effects of Long - term heave in the London Clay.

5.7. The preliminary basement slab calculations have considered hydrostatic uplift pressures and heave forces arising from the excavation.

5.8. The BIA confirms that the neighbouring properties have a similar existing basement and lightwell to the front of the property. There is no evidence that alterations have been made to the original basements at the neighbouring properties.

5.9. The BIA identifies that the public highways to the front of the property is within 5m from the proposed development.

5.10. The GMA provides an assessment of vertical and horizontal ground movements and indicates the potential damage to neighbouring properties as no higher than Category 1 on the Burland scale, 'Very Slight Damage'. Temporary works propping and sequencing proposals are provided. Assuming that the works are carefully controlled and monitored, the proposed development's impacts are acceptable and in accordance with CPG4 . A monitoring strategy during excavation and construction is proposed which should be confirmed with the Party Wall Surveyor.

5.11. It is accepted that there is no increase in the hardstanding area and therefore no increased surface water runoff. It is accepted that the proposed basement construction will not impact on the wider hydrogeology of the area.

5.12. The BIA has shown that although the development is close to a tributary of a "lost" river, it will not impact on the wider hydrogeology of the area.

5.13. It is accepted that there are no slope stability concerns regarding the proposed development.

5.14. The FRA confirms that the area is not prone to flooding and that the floor risk is negligible.

5.15. Queries and requests for clarification are described in Section 4 and summarised in Appendix 2. Assuming that further investigation and assessment is undertaken prior to construction, as recommended in the BIA, the criteria of CPG4 and DP27 have been met.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Stability	Highway to be included in GMA	Open	
2				
3				
4				
5				
6				

Appendix 3: Supplementary Supporting Documents

None

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