CampbellReith
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133 Arlington Road, London NW1 7ET

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12727-86
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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 133 Arlington Road, London, NW1 7ETD (planning reference 2017/4922/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 checklist.

1.4. The Basement Impact Assessment (BIA), Structural statement and Structural drawings have been carried out by established firms of structural engineering consultants. The authors have suitable qualifications.

1.5. The building concerned and both neighbouring buildings are Grade II listed properties.

1.6. The existing property is described as being a terraced four storey house.

1.7. The proposal involves a modest lowering of the full extent of the existing basement level by 0.4m, along with the extension of the basement level into the rear garden.

1.8. An appropriate site specific ground investigation has been carried out to identify the existing foundations and geological conditions.

1.9. The ground conditions have been identified as made ground overlying London Clay.

1.10. Reinforced concrete underpin retaining walls and a reinforced concrete slab will be used to form the basement structure.

1.11. Outline calculations proving the schemes ability to mitigate heave to be presented.

1.12. A ground movement assessment has been produced which identified the impact on the surrounding properties as being Burland category 0 (negligible) and Burland category 1 (very slight).

1.13. An outline movement monitoring scheme has been provided.

1.14. Appropriate outline construction method statement and temporary works details have been provided to demonstrate the feasibility of the proposal.

1.15. An outline construction program has been provided.

1.16. No public transportation assets are in the immediate vicinity of the site.

1.17. The proposal will result in an increase in the area of hardstanding. An outline SUDs strategy has been submitted.

1.18. It is accepted that the proposal does not adversely impact ground water flows, and the basement is likely to be founded above the ground water level.

1.19. It is accepted that the site is not within an area known to be at risk of flooding.

1.20. It is accepted that there are no ground stability issues associates with slopes.

1.21. It can be confirmed that the proposal adheres to the requirements of CPG Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 12th June 2018 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 133 Arlington Road, NW1 7ET, reference 2017/4922/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.
- 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 *"Excavation of lower ground floor level to increase ceiling height; erection of part single, part two storey rear extension at lower ground and upper ground floor levels. Removal of internal walls and chimney breasts and erection of new walls in connection with reconfiguration of room layouts, installation of two roof lights in main roof; installation of secondary glazing to front first and second floor windows. Associated structural works and landscaping."*

The Audit Instruction confirmed that 133 Arlington Road is a listed building or neighbours a listed building.

2.6. CampbellReith accessed LBC's Planning Portal on 25th July 2018 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment v1.1
- D+A and Heritage Statement revA
- 133 Arlington Road - RTA Structural Report and Calcs - 26.01.18
- 133 Arlington Road - RTA Structural Dwgs - 26.01.18
- 133 Arlington Road - Planning Amendments - 29.01.18
- 133 Arlington Road - 17110 Arboricultural Report
- 133 Arlington Road - S001 - LOCATION PLAN

2.7. Following the D1 report the following documents were submitted:

- 133 Arlington Road - Flood Risk Assessment and SUDS Statement - LBH450...
- 133 Arlington Road - Construction Programme
- 133 Arlington Road - Structural Monitoring & Contingency Plan (LBH4501sm...

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?	No	Reference made to CGHHS maps but no maps presented.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	No	Only site location maps presented.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	A justification statement is generally provided for 'no' answers
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	A justification statement is generally provided for 'no' answers
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	A justification statement is generally provided for 'no' answers
Is a conceptual model presented?	Yes	
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Ground Investigation and Basement Impact assessment.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Ground Investigation and Basement Impact assessment.

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Item	Yes/No/NA	Comment
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Ground Investigation and Basement Impact assessment.
Is factual ground investigation data provided?	Yes	BIA and appendix A
Is monitoring data presented?	Yes	Monitoring during first investigatory boreholes, no repeat monitoring.
Is the ground investigation informed by a desk study?	Yes	BIA
Has a site walkover been undertaken?	Yes	BIA
Is the presence/absence of adjacent or nearby basements confirmed?	No	No confirmation of neighbouring basements and none considered in GMA.
Is a geotechnical interpretation presented?	Yes	BIA
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 6 of the BIA.
Are reports on other investigations required by screening and scoping presented?	Yes	Ground Movement Assessment.
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	No	
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	Yes	Ground movement assessment
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Temporary propping.

Item	Yes/No/NA	Comment
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 1?	Yes	
Are non-technical summaries provided?	No	

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by an established firm of engineering consultants, LBH Wembley and the authors have suitable qualifications. Structural engineering consultants Richard Tant associates have provided a structural statement and structural drawings.

4.2. The property forms part of a terraced row of houses all of which are Grade II listed buildings. Consequently 133 Arlington and the neighbouring buildings either side are listed buildings.

4.3. The existing property is described as being a four storey terrace house plus an existing Lower Ground level at approximately 2m below ground. An intermediate level between lower ground and ground floor is located at approximately 0.5m below ground level. The construction is not described and is assumed to be load bearing masonry and timber floors. A single storey rear extension is also present.

4.4. The proposal involves the demolition of the existing extension at the rear of the building and lowering of the full extent of the existing Lower Ground slab level by 400mm. The Lower Ground level is to extend under the area currently occupied by the rear extension. A new double storey extension is to be built at the rear of the building.

4.5. A site specific ground investigation has been carried out which consisted of 2 window sample boreholes. Borehole 1 at the rear of the building to 6.3m bgl. Borehole 2 at the front of the building to 3.0m bgl. Three trial pits to determine existing foundation conditions were also carried out. Ground water was not encountered during the initial visit in any of the boreholes or trial pits. No return monitoring visits have been made.

4.6. The geology was identified as up to 1m of made ground overlaying the London Clay Formation to depth.

4.7. Sequenced/hit and miss Reinforced Concrete underpinning to the party walls is envisaged. Sequenced/hit and miss RC retaining walls will be used to form the rear extension. Parameters for retaining wall design are supplied in the BIA and note is made of the maximum height of the retaining wall at 3.4m. Outline retaining wall calculations proving feasibility of the scheme and accounting for hydrostatic pressure on the retaining wall have been included in the submission.

4.8. The BIA acknowledges the potential for heave due to the depth of excavation in the rear of the site. It appears this is to be mitigated by casting the basement slab and walls monolithically.

4.9. Detailed Structural drawings showing the construction methodology and suitable temporary propping arrangements are included.

4.10. A ground movement assessment has been produced which utilises classic modified Boussinesq elastic theory to calculate ground movements for the proposal and the impact on the immediate neighbouring properties. The impact on all neighbouring building elements is identified as being Burland category 0 (negligible) and Burland category 1 (very slight).

4.11. A movement monitoring proposal has been submitted. The proposal contains appropriate trigger levels and corresponding actions. The trigger values set are appropriate to the movement figures calculated in the GMA.

4.12. It is accepted that there are no ground stability issues associated with slopes.

4.13. A construction programme detailing key dates and timelines has been provided.

4.14. The closest underground tunnel is the Northern line located 75m from the site. It is accepted that the proposed works pose a low risk of damage to public transportation assets.

4.15. The site is directly underlain by the London Clay Formation. This is designated as an unproductive strata. A fair assumption is made that no significant groundwater flow is expected to occur beneath the site. However allowance should be made for local perched water especially during times of inclement weather. Local dewatering during excavation may be necessary.

4.16. Part of the rear garden is to be paved increasing the hard surface area of the site. A SUDs assessment has been undertaken and the new drainage scheme is to incorporate attenuation in the form of a green roof. An outline SUDS calculation is provided that shows pre and post run off rates.

4.17. The BIA identifies the site to be at a very low risk of surface water flooding, with this statement having been informed by the Environment Agency maps.

4.18. It can be confirmed that the proposal adheres to the requirements of CPG Basements.

5.0 CONCLUSIONS

5.1. The Basement Impact Assessment (BIA) has been carried out by an established firm of engineering consultants, LBH Wembley and the authors have suitable qualifications. Structural engineering consultants Richard Tant associates have provided a structural statement and structural drawings.

5.2. 133 Arlington Road and both neighbouring properties are Grade II listed buildings.

5.3. The existing property is described as being a terraced four-storey house. The lowest level (Lower Ground) sits approximately 2.0m bgl.

5.4. The proposal involves the lowering of the full extent of the existing lower ground slab level by 400mm and the extension of the lower grounds level to the rear of the building. A double storey extension (including the lower ground level) is to be built at the rear.

5.5. An appropriate site specific ground investigation has been carried out which consisted of 2 window sample boreholes, 3 foundation inspection pits, and Ground water monitoring.

5.6. The geology was identified as a moderate depth of made ground overlaying the London Clay Formation. No groundwater was encountered during the initial visit.

5.7. Reinforced concrete underpin retaining walls are to form the basement structure. Suitable outline retaining wall calculations have been supplied.

5.8. It appears the basement slab is to be cast monolithically with the retaining walls in order to mitigate heave forces.

5.9. Suitable methodology showing appropriate temporary propping arrangements has been included.

5.10. A ground movement assessment has been produced which calculates ground movements for the proposal and the impact on the immediate neighbouring properties. The impact on all neighbouring building elements is identified as being Burland category 0 (negligible) and Burland category 1 (very slight).

5.11. An outline movement monitoring strategy containing appropriate trigger levels and corresponding actions has been provided.

5.12. A construction program detailing key dates and timelines has been provided.

5.13. No public transportation assets are located in the immediate vicinity of the site.

5.14. The site is underlain by the London Clay Formation an unproductive strata. It is accepted that no significant ground water flow is to be expected.

5.15. The area of hard-surfacing will be increasing and outline SUDs calculations have been provided. Attenuation is to be achieved through the use of a green roof.

5.16. The site is identified as being in an area of very low surface flood risk.

5.17. It is accepted that there are no ground stability issues associated with slopes.

5.18. It can be confirmed that the proposal adheres to the requirements of CPG Basements.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

No comments pertinent to the scope of the audit were received at the time of audit.

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Stability	Movement monitoring of neighbouring properties to be submitted. See section 4.11	Closed	19/10/2018
2	Programme	Construction programme detailing key dates and timelines to be submitted. See section 4.13	Closed	19/10/2018
3	Transport	Evidence of consultation with transport authorities or maps showing no public transport assets within the immediate vicinity of the site. See section 4.14	Closed	24/09/2018
4	Hydrology	SUDs outline calculations required. Elaboration on how attenuation is to be achieved. See section 4.16	Closed	19/10/2018

Appendix 3: Supplementary Supporting Documents

None

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