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72 Maresfield Gardens, London NW3 5TD

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12727-72
Revision: F1

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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 72 Maresfield Gardens, London, NW3 5TD (planning reference 2018/0669/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) and desk study and ground investigation report have been carried out by an established firm of structural engineering consultants respectively. However further evidence of appropriate qualifications is required.

1.5. A Grade II listed building is located in the adjacent parallel road, however 72 Maresfield Gardens is itself not listed.

1.6. The existing property is described as being a three storey detached house plus an existing basement level.

1.7. The proposal involves a modest lowering of the full extent of the existing basement level 0.4m.

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

1.9. It is not anticipated that underpinning of the existing foundations will be required.

1.10. A new basement slab is proposed to be constructed on piled foundations.

1.11. The geology was identified as made ground overlaying sandy clay. However further details of the ground investigation is required.

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

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

1.14. A outline movement monitoring strategy has been provided which describes monitoring to the applicants own building.

1.15. A London Overground tunnel has been identified as being located 22m North of the property. Evidence of consultation with the relevant asset holder has been provided and it is accepted the risk of damage to the tunnel is very low.

1.16. It is accepted the proposal will not significantly adversely impact on the existing surface water drainage.

1.17. It is stated the ground water will not be impacted by the proposal and is below the proposed basement level.

1.18. It is accepted that the site is not within an area known to be at risk of flooding, and that there are no ground stability issues associates with slopes.

1.19. 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 March 2018 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 72 Maresfield Gardens, NW3 5TD, reference 2018/0669/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 existing basement to lower internal floor height by 600mm"*

The Audit Instruction also confirmed that 72 Maresfield Gardens was not, or was not a neighbour to, listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal on 15th December 2017 and gained access to the following relevant documents for audit purposes:

- 0158-GA-006 - Location Plan
- 158_001 - Existing Basement Floor Plan
- 158_002 - Existing Section
- 158_101 - Proposed Basement Floor Plan
- 158_102 - Proposed Section
- 16016 - Structural Report BIA
- Appendix A - Part 1 (GI and BIA) (Redacted)
- Appendix A - Part 2 - 1 to 9
- Appendix B - GMA and Basement Wall Stability Assessment (Redacted)
- Appendix C - Architectural Drawings
- Appendix D - Proposed Structural Drawings
- Appendix E - 158 Neighbour Consultation Letter (Redacted)
- Application Form (No Personal Data)
- Design & access statement

2.7. Further information requested and received since D1 issue

- 180130_16016_Structural Report_BIA_sig
- Pages from P1170J1222---Marsefield-Gardens---DS-GI-&-BIA-1-50
- Response from LU
- 180927_16016_0537-TN-04-00

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Refer first page of BIA and Ground Investigation Report.
Is data required by Cl.233 of the GSD presented?	No	Construction Programme absent.
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	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.

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	Two repeat monitoring visit were carried out
Is the ground investigation informed by a desk study?	Yes	Ground Investigation and Basement Impact assessment prepared by ground&water.
Has a site walkover been undertaken?	Yes	BIA
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Site is stand alone.
Is a geotechnical interpretation presented?	Yes	Ground Investigation and Basement Impact assessment.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 14 of the Jomas report.
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?	N/A	The presence of neighbouring basements is not discussed.
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 screen and scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Heave protection, lateral propping consideration in design of temporary works

Item	Yes/No/NA	Comment
Has the need for monitoring during construction been considered?	Yes	Movement monitoring to 72 Maresfield Gardens itself has been proposed.
Have the residual (after mitigation) impacts been clearly identified?	No	
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	Ground Investigation and Basement Impact assessment prepared by Jomas indicates damage category 0 to the surrounding properties.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by an established firm of structural engineering consultants, MultiLateral, the qualifications of the authors have not been provided. The contents of this report primarily describes the structural and civil proposal, as well as containing a construction method statement.

4.2. A desk study and ground investigation report has been produced by Jomas Associates Ltd, who are a well-known site investigation contractor and geotechnical consultants. This report also contains a screening and scoping assessment. The qualifications of the authors of this report are appropriate for the hydrogeological assessment of the proposal.

4.3. A Grade II listed building is located in the adjacent parallel road, Fitzjohn's Avenue, however it is not backing directly onto the property and is separated from the property by some considerable length of garden.

4.4. The existing property is described as being a three storey detached house plus an existing basement level at 1.2m below ground. The constructed is described as load bearing masonry with a combination of concrete and timber floors. The property is set back from its boundary with the surrounding properties generally consisting of large detached residential properties set back from their boundaries.

4.5. The proposal involves the lowering of the full extent of the existing basement slab level by 400mm, along with structural alterations to the super structure.

4.6. A site specific ground investigation has been carried out which consisted of 4 window sample boreholes to 4.45m bgl, and 9 foundation inspection pits. Ground water monitoring was carried out with 4 return monitoring visits.

4.7. The foundations were found to generally be founding 0.7m bgl. The proposed lowing of the basement slab by 400mm therefore is not anticipated to undermine the existing foundation and underpinning it is stated that "minimal underpinning works to the existing foundations would be required". Similarly the structural drawings that have been provided do not indicate any underpinning works as being required, with the a new piled basement slab abutting the toes of the existing foundations. It is accepted that the applicant has carried out appropriate site investigations in order to demonstrate that underpinning is generally not required in order to form the lowered basement level.

4.8. The basement slab is indicated as being piled, with an indication that the piles are to be designed for both a tension and a bearing case. While it is not discussed within the submitted documentation it is assumed that the tension case is due to heave due to unloading of the Claygate Member due to the excavation. It is accepted that piling the basement slab is an

acceptable way to support the basement slab and to resist heave forces should this be necessary.

4.9. A light well to the front of the property is proposed as being formed form 250mm thick RC walls on a ground bearing basement slab. While the construction of this light well is not included within the construction method statement it is accepted that the potential adverse impact from the construction of the light well is minor given limited depth of excavation being carried out.

4.10. The geology was identified as up to 1m of made ground overlaying the Claygate Member. During ground water monitoring the highest recorded water level was identified at 2.7m bgl. An appropriate ground model has been presented which describes the geotechnical strata based on the site investigation data.

4.11. A ground movement assessment has been produced which has used XDisp and PDisp software suites 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).

4.12. A 2D finite element analysis of the existing basement wall during construction case when the existing basement slab has been removed and the ground level lowered. It concludes that the wall is not stable without temporary propping in the construction case and that temporary lateral propping is required between the basement walls to resist lateral forces until the new basement slab has been constructed.

4.13. A construction method statement has been produced which indicates temporary propping installed prior to the existing basement slab demolition and excavation. Once the proposed basement slab is constructed it will provide a permanent prop to the foundations and the lateral propping is to be removed. It is accepted that adequate detail is provided which demonstrates the feasibility of the construction of the proposal.

4.14. A outline movement monitoring strategy has been proposed which describes that vertical movement will be monitored at the mid-point of the façade near ground level, and lateral movements at the top of the façade half way been return walls. Readings are to be taken during the works and for a 3 month period following the works. Reasonable trigger values have been proposed to be adopted within the monitoring. The outline monitoring proposed is accepted as being suitable in order to prevent excessive movements to the applicants building, and is to be developed further during the detailed design.

4.15. A London Overground tunnel has been identified as being located 22m North of the property. The asset holder, Network rail has verbally advised that they consider the risk of damage to the tunnel resulting from the proposed works to be low. In addition a ground movement

assessment has been produced that indicates a ground movement of 1mm at the tunnel. This is considered negligible.

4.16. It is accepted that the surface water drainage is largely unchanged, with the basement staying within the footprint of the existing building. It is stated that the existing connection to the combined sewer will be reused.

4.17. The basement is located within the Claygate Member which is classed as a secondary A aquifer capable of bearing ground water flows. Ground water monitoring has identified the ground water level at a high level of 2.7m bgl. It is stated that the ground water is below the basement level and will not be impacted by the basement lowering.

4.18. It is accepted that the site is not within an area known to be at risk of flooding, and that there are no ground stability issues associates with slopes.

4.19. 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 structural engineering consultants, MultiLateral. A desk study and ground investigation report has been produced by Jomas Associates Ltd, who are a well-known site investigation contractor and geotechnical consultants. Only the qualifications of the latter report are provided which are suitable for the hydrogeological assessment of the proposal.

5.2. A Grade II listed building is located in the adjacent parallel road, however 72 Maresfield Gardens is itself not listed.

5.3. The existing property is described as being a detached three storey detached house plus an existing basement level at 1.2m below ground.

5.4. The proposal involves the lowering of the full extent of the existing basement slab level by 400mm.

5.5. An appropriate site specific ground investigation has been carried out which consisted of 4 window sample boreholes, 9 foundation inspection pits, and Ground water monitoring.

5.6. The foundations were identified as being of sufficient depth to allow for the basement lowering, and are not anticipate as requiring underpinning.

5.7. A new basement slab is proposed which is to be piled for both bearing and tensions due to clay heave.

5.8. The geology was identified as a moderate depth of made ground overlaying the Claygate Member.

5.9. A ground movement assessment has been produced which calculates ground movements for the proposal and the impact on the immediate neighbouring properties using industry standard software. The impact on all neighbouring building elements is identified as being Burland category 0 (negligible).

5.10. An analysis of the stability of the existing basement wall during construction has been carried out which determines that temporary lateral support should be provided. An appropriate outline construction method statement and temporary works details have been provided to demonstrate the feasibility of the proposal.

5.11. A outline movement monitoring strategy has been provided which describes monitoring to the applicants own building.

5.12. A London Overground tunnel has been identified as being located 22m North of the property. Evidence of consultation with Network Rail has been supplied. A ground movement assessment has also been produce. It is accepted the proposed works pose a low risk of damage to the tunnel.

5.13. It is accepted that the surface water drainage is largely unchanged and that the proposal will not significantly adversely impact on the existing surface water drainage.

5.14. It is accepted that the ground water level is below the basement level and will not be impacted by the basement lowering.

5.15. It is accepted that the site is not within an area known to be at risk of flooding, and that there are no ground stability issues associates with slopes.

5.16. 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.

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Hydrogeology	A borehole location plan is required	Closed	June 2018
2	Stability	Evidence of consultation with public asset owners such as TFL in order to determine interest in the proposal.	Closed	October 2018
3	Qualifications	The qualifications of the authors of the Basement Impact Assessment to be provided to demonstrate the suitability of assessing the stability and hydrological components of the assessment in accordance with CPG Basements.	Closed	June 2018

Appendix 3: Supplementary Supporting Documents

None

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