

62 Avenue Road, St John's Wood
London, NW8 6HT

Basement Impact Assessment
Audit

For

London Borough of Camden

Project Number: 12466-12

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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 62 Avenue Road, St John's Wood, London NW8 6HT (planning reference 2016/4931/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 BIA was undertaken by Alan Baxter Ltd. The reviewer's qualifications are now in accordance with CPG4 requirements.
- 1.5. Although they are referenced, it would be beneficial to include the relevant map extracts from the Arup GSD, Camden SFRA and the Environment Agency (EA) identifying the site location to support statements made in the BIA screening process.
- 1.6. The proposal includes increasing the depth of the existing lower ground floor to construct a basement below. The Basement Impact Assessment states that a contiguous piled wall and concrete retaining wall will be formed with the basement and ground floors formed of reinforced concrete slabs propping the walls. The basement floor will also be supported by piles. Structural details of the proposed basement are provided with a construction sequence provided in drawings and the text in Section 11.4 of the Basement Impact Assessment.
- 1.7. The ground movement assessment predicts Category 0 (Negligible) damage for the side wall and Category 1 (Very Slight) damage for the front wall of No 60 Avenue Road. For No 64 Avenue Road Category 0 (Negligible) damage is predicted for the side wall and annexe wall and Category 1 (Very Slight) damage for the rear wall. Appropriate mitigation measures have been outlined in Section 11.8 of the BIA.
- 1.8. The BIA indicates that Avenue Road is at risk of surface water flooding. However, all lightwells and basement access points will be constructed a minimum of 600mm above the road levels to mitigate any risk. The proposed development will not impact the wider hydrological environment.
- 1.9. The BIA identifies that perched water will be encountered during construction and proposes dewatering utilising sump pumps to control any inflows. It is accepted that the proposed

development is not at risk of groundwater flooding and will not impact the wider hydrogeological environment.

- 1.10. Work durations have been indicated in the BIA, however a detailed programme should be submitted at a later date. Details of the Construction Management Plan are to be agreed with the Council.
- 1.11. Details and trigger levels of movement monitoring should be outlined in the detailed Construction Management Plan.
- 1.12. It is considered that the BIA Revision A meets the criteria of CPG4.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 26th September 2016 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 62 Avenue Road, St John's Wood, London NW8 6HT, Camden Reference 2016/4931/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 "*Erection of a 2 storey, single family dwelling house (Class C3) with basement and accommodation in the roof space, following the demolition of the existing main dwelling house*

The Audit Instruction also confirmed 62 Avenue Road was not a neighbour to any listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal on 26th October 2016 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA) – September 2016 by Alan Baxter Ltd
- Design and Access Statement – August 2016 by BB Partnership Ltd
- Architectural Drawings by BB Partnership consisting of
 - Basement Layout Plan – 24/10/16
 - Lower Ground Layout Plan – 08/07/16
 - Ground Floor Plan – 24/10/16
 - First Floor Plan – 08/07/16
 - Second Floor and Roof Plan – 08/07/16
 - Elevations – 08/07/16
 - Sections – 08/07/16
 - Site Plan – 08/07/16

2.7. CampbellReith were issued the documents listed below on 30 November 2016 for audit purposes. These are presented in Appendix 3 and considered in this revised audit report.

- Basement Impact Assessment Report (BIA), Rev A – November 2016 by Alan Baxter Ltd

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Updated information has been provided in BIA Rev A
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	Arup GSD, EA and Camden SFRA map referred to but extracts with site location indicated not provided (see Audit paragraph 4.6).
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	As above.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Appendix C. Relevant map extracts not provided with site location indicated (see Audit paragraph 4.6).
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Appendix C. Relevant map extracts not provided with site location indicated (see Audit paragraph 4.6).
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Appendix C. Relevant map extracts not provided with site location indicated (see Audit paragraph 4.6).
Is a conceptual model presented?	Yes	BIA Section 9.1 and Drawing 1636/01/SK01.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Section 9.4.

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Section 9.3.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Section 9.2.
Is factual ground investigation data provided?	Yes	Southern Testing Site Investigation Report (Borehole Logs, Dynamic Probe Results and Geotechnical Test Results).
Is monitoring data presented?	Yes	BIA Section 10.0.
Is the ground investigation informed by a desk study?	Yes	Southern Testing Site Investigation Report Section B.
Has a site walkover been undertaken?	Yes	BIA Section 1.0 and Southern Testing Site Investigation Report Section B7.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Updated information has been provided in BIA Rev A
Is a geotechnical interpretation presented?	Yes	BIA Section 11.1 and Southern Testing Site Investigation Report Section D12.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Updated information has been provided in BIA Rev A Appendix E
Are reports on other investigations required by screening and scoping presented?	Yes	Ground Investigation report provided.
Are the baseline conditions described, based on the GSD?	Yes	Included within the BIA.
Do the base line conditions consider adjacent or nearby basements?	Yes	See Audit Paragraph 4.10. BIA Section 5.0 and Appendix C Stability Screening Question 13.

Item	Yes/No/NA	Comment
Is an Impact Assessment provided?	Yes	BIA Section 11.0.
Are estimates of ground movement and structural impact presented?	Yes	BIA Section 11.7 and Appendix E. See Audit Paragraph 4.13.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	BIA Section 11.0.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Ground monitoring and temporary propping is proposed.
Has the need for monitoring during construction been considered?	Yes	BIA Section 11.6.
Have the residual (after mitigation) impacts been clearly identified?	Yes	Updated information has been provided in BIA Rev A Section 11.8
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	BIA Section 11.7 and Appendix E
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	BIA Section 9.2, 9.3 and 11.8.
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	BIA Section 11.7. See Audit Paragraph 4.14 and 4.15.
Are non-technical summaries provided?	Yes	Updated information has been provided in BIA Rev A Sections 8.1, 9.5, 10.1 and 11.3.

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out by Alan Baxter Ltd and Southern Testing with the author's credentials being shown to be suitable.
- 4.2. The LBC Instruction to proceed with the audit identified that the basement proposal was not adjacent to any listed buildings.
- 4.3. The existing site comprises a detached house with three above ground storeys and a lower ground floor. The levels across the site fall approximately 2.8m from the back of the property to the front.
- 4.4. The proposed development will comprise a five storey dwelling that will comprise three above ground storeys with a lower ground floor and a basement which will replace the existing house but increasing the footprint from approximately 16.0m x 17.0m to 14.0m x 28.0m. The proposed new basement structural slab level is located approximately 6.0m below ground floor level.
- 4.5. The proposal includes increasing the depth of the existing lower ground floor to construct a basement below. The Basement Impact Assessment states that a contiguous piled wall and concrete retaining wall will be formed, to facilitate the excavation, with the basement and ground floors formed from reinforced concrete slabs which will prop the walls. The basement floor slab will also be founded on pile foundations. Structural details of the proposed basement are provided with a construction sequence (drawings and the text) within Section 11.4 of the Basement Impact Assessment.
- 4.6. The relevant map extracts from the Arup GSD, Camden SFRA and the Environment Agency (EA) identifying the site location on each map are referenced but not included. It would be beneficial if these extracts are included as they help to support statements made in the BIA screening process.
- 4.7. The ground investigation revealed Made Ground to between approximately 0.85m to 3.60m bgl below which lies the London Clay Formation. Although groundwater was monitored at shallow depth, the water table is considered to be perched water within the permeable sections of the Made Ground.
- 4.8. Although Section 11.3 of the BIA anticipates that the impacts of groundwater will be extremely low to negligible, an allowance for dewatering will be made for perched water in the excavation and construction of the basement through the use of strategically placed sumps with intermittent pumping.

- 4.9. Section 9.2 of the BIA indicates that the public highway is at risk of surface water flooding. However, the site is 500mm above the existing Avenue Road pavement levels and all lightwells and basement access points will be constructed a minimum of 600mm above the road levels to mitigate any risk.
- 4.10. The BIA identifies that the proposed development introduces additional permeable landscaped area to the site, which offers some benefit in terms of attenuation of rainfall and reduction of peak discharge flows.
- 4.11. The ground investigation has been informed by a desk study which is contained with Southern Testing Site Investigation Report Section B with the geotechnical interpretation of the investigation included in BIA Section 11.1 and Southern Testing Site Investigation Report Section D12 with both complying with the requirements of the Arup GSD.
- 4.12. A ground movement analysis has been undertaken based on a maximum excavation depth of 6.50m and a contiguous piled wall with an embedment depth of 1.50 x the excavation depth. The calculations are based on CIRIA C580 with high support stiffness assumed. It is acknowledged that the effects of heave are likely to be negligible outside of the basement footprint due to the piled wall restricting the movements within the basement. Heave movements due to the unloading of the soil beneath the basement have been considered in the design and the use of a clay heave protection board has been proposed.
- 4.13. Damage assessments have been undertaken for No 60 and No 64 Avenue Road based on the movement analysis discussed above. Category 0 (Negligible) damage is predicted for the side wall and Category 1 (Very Slight) damage for the front wall of No 60 Avenue Road. For No 64 Avenue Road Category 0 (Negligible) damage is predicted for the side wall and annexe wall and Category 1 (Very Slight) damage for the rear wall.
- 4.14. Although a duration for the works is indicated in the Basement Impact Assessment (BIA), a detailed programme should be submitted by the appointed contractor at a later date. Details of the CMP should be agreed with the Council.
- 4.15. Although Section 11.6 mentions movement monitoring should be undertaken, details and trigger levels are not described. These should be provided as part of the detailed Construction Management Plan.

5.0 CONCLUSIONS

- 5.1. The BIA was undertaken by Alan Baxter Ltd. The reviewer's qualifications are now in accordance with CPG4 requirements.
- 5.2. Although they are referenced, it would be beneficial to include the relevant map extracts from the Arup GSD, Camden SFRA and the Environment Agency (EA) identifying the site location to support statements made in the BIA screening process.
- 5.3. The proposal includes increasing the depth of the existing lower ground floor to construct a basement below. The Basement Impact Assessment states that a contiguous piled wall and concrete retaining wall will be formed with the basement and ground floors formed of reinforced concrete slabs propping the walls. The basement floor will also be supported by piles. Structural details of the proposed basement are provided with a construction sequence provided in drawings and the text in Section 11.4 of the Basement Impact Assessment.
- 5.4. The ground movement assessment predicts Category 0 (Negligible) damage for the side wall and Category 1 (Very Slight) damage for the front wall of No 60 Avenue Road. For No 64 Avenue Road Category 0 (Negligible) damage is predicted for the side wall and annexe wall and Category 1 (Very Slight) damage for the rear wall. Appropriate mitigation measures have been outlined in Section 11.8 of the BIA.
- 5.5. The BIA indicates that Avenue Road is at risk of surface water flooding. However, all lightwells and basement access points will be constructed a minimum of 600mm above the road levels to mitigate any risk. The proposed development will not impact the wider hydrological environment.
- 5.6. The BIA identifies that perched water will be encountered during construction and proposes dewatering utilising sump pumps to control any inflows. It is accepted that the proposed development is not at risk of groundwater flooding and will not impact the wider hydrogeological environment.
- 5.7. Work durations have been indicated in the BIA, however a detailed programme should be submitted at a later date. Details of the Construction Management Plan are to be agreed with the Council.
- 5.8. Details and trigger levels of movement monitoring should be outlined in the detailed Construction Management Plan.
- 5.9. It is considered that the BIA Revision A meets the criteria of CPG4.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA format	BIA author credentials not in accordance with CPG4 requirements	Closed – Clarification provided in BIA Rev A	December 2016
2	BIA format	Suitable maps/plans	Although they are referenced it would be beneficial to include the relevant map extracts from the Arup GSD, Camden SFRA and the Environment Agency identifying the site location.	N/A
3	BIA format/stability	Presence/absence of basement to No 64 Avenue Road as outlined in Audit paragraph 4.10	Closed – Clarification provided in BIA Rev A.	December 2016
4	BIA format/stability	Retaining wall calculations not given in Appendix E and stiffness parameters not given for retaining wall design	Closed – Provided in BIA Rev A Appendix E	December 2016
5	Stability	Basement Heave	Closed – Information provided in BIA Rev A	December 2016
6	Stability	Ground Movement Assessment – Mitigation measures	Closed – Provided in BIA Rev A	December 2016
7	BIA format	Non-Technical Summaries	Closed – Provided in BIA Rev A	December 2016
8	BIA format	Works programme and CMP	Detailed programme to be provided by appointed Contractor at a later date. Details of Constuction Management Plan to be agreed with Council.	N/A
9	Stability	Monitoring proposals	Details and trigger levels to be agreed as part of detailed Construction Management Plan.	N/A

Appendix 3: Supplementary Supporting Documents

BIA, Rev A, November 2016 – Alan Baxter Ltd

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