

79 Redington Road, London
NW3 7RR

Basement Impact Assessment
Audit

For
London Borough of Camden

Project Number: 12727-77
Revision: D1

June 2018

Campbell Reith Hill LLP
Friars Bridge Court
41-45 Blackfriars Road
London
SE1 8NZ

T: +44 (0)20 7340 1700
E: london@campbellreith.com
W: www.campbellreith.com

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Path	RMam 12727-77 -010618- 79 Redington Road-D1
Author	A Morcos, MSc CEng MICE
Project Partner	E M Brown, BSc MSc CGeol FGS
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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 79 Redington Road, London NW3 7RR (planning reference 2018/1697/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 and supplemented Ground Investigation have been prepared by firms of engineering consultants using individuals who possess suitable qualifications.
- 1.5. The basement proposal neither involved a listed building nor was adjacent to listed building.
- 1.6. The BIA submissions include land Stability, Hydrogeology and Hydrology screening and relevant site investigations.
- 1.7. A new ground floor extension is proposed at the rear of the Flat A of four-storey detached property, deepen the existing basement and extend the basement at the rear of the property. The proposals also include the construction of a lightwell.
- 1.8. An appropriate site specific SI has been carried out.
- 1.9. The proposed basement is to be founded in the Bagshot Formation.
- 1.10. It is accepted that the excavation level is unlikely to be below groundwater and that the basement will not adversely impact on the wider groundwater regime.
- 1.11. An appropriate construction methodology has been proposed which indicates the basement is to be constructed in accordance with good practise construction principles using common techniques.
- 1.12. The structural drawings are not consistent with the structural calculations.
- 1.13. A ground movement assessment and formal damage category determination is required in order to demonstrate that the impact on surrounding properties is equal to Burland category 1 or less as stipulated by Camden planning policy.

- 1.14. An outline works programme indicating the main phases and anticipated durations of work to be submitted.
- 1.15. Permeable paving and a new buried soakaway are proposed as part of the SUDs strategy.
- 1.16. An Arboricultural Report has been submitted, which describes the impact of the development on the trees located within the influence zone. The proposed construction should be reviewed by LBC's Landscape Officer in regards to potential tree protection requirements.
- 1.17. It is accepted that nearby rail assets are outside of the zone of influence of the proposed site.
- 1.18. It is accepted that the development will not impact on the wider hydrogeology of the area and is not in an area subject to flooding.
- 1.19. It is accepted that stability to the surrounding slopes to the site can maintain stability during construction and should be considered further during the detailed design.
- 1.20. A number of queries for additional information are listed in appendix 2.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 8th May 2018 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 79 Redington Road, London NW3 7RR (planning reference 2018/1697/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: Basements and Lightwells.
 - 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.

LBC's Audit Instruction described the planning proposal as;

"Extension of basement to include open lightwells to front and rear, demolition of rear conservatory and erection of single storey rear extension, alterations to landscape to include repaving, gate on south side, bins and cycling stores on north side, all in relation to Flat A (Class C3)."

- 2.5. The Audit Instruction also confirmed 79 Redington Road involved, or was a neighbour to, listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal on and gained access on 22nd May 2018 to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA) by Ingleton Wood, dated April 2018, Job No. 811365
- BIA Appendix B - Drawings
- BIA Appendix C - Calculations
- BIA Appendix D - Site Investigation Report
- Flood Risk Assessment and Drainage Strategy by Ingleton Wood, dated 6th April 2018, Job No. 811365
- BIA Appendix G - Screening Responses by Ingleton Wood, dated April 2018
- Daylight and Sunlight Assessment
- Design and Access Statement by XUL Architecture, dated 6th April 2018
- Final Tree Report by John Cromar's Arboricultural Company Limited, dated 6th April 2018, dated 1-38-4321/3
- Heritage Statement by cgms heritage, dated March 2018, ref: JCH00363
- Planning Statement, dated April 2018
- Thames Water response, dated 24th April 2018
- Planning Application Drawings prepared by Ingleton Wood, dated 05/04/2018 and consisting of
 - Proposed Foundation GA
 - Ground Floor Steelwork GA
 - First Floor Steelwork
 - Proposed Drainage Layout and Drainage Schematic
- 180321_17028_EX-00 to EX-07 Existing Drawings by XUL Architecture, dated March 2018
- 180321_17028_LP-01 Existing Site Plan by XUL Architecture dated March 2018
- 180321_17028_PA-00 to PA-09 Proposed Drawings by XUL Architecture, dated March 2018

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Supplementary Groundwater Report has been issued by Listers Geo (individuals holds suitable hydrogeological qualification)
Is data required by Cl.233 of the GSD presented?	No	A work programme for construction, operation and commissioning is missing Characteristics of the Potential Impact is missing
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	Structural drawings have been provided in Appendix B
Are suitable plan/maps included?	Yes	Environmental Agency flood map for the property is present in the 'Flood Risk Assessment and Drainage Strategy'
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?	Partially	No justification has been provided for 'No' answers;
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Partially	No justification has been provided for 'No' answers;
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Partially	No justification has been provided for 'No' answers;
Is a conceptual model presented?	Yes	
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	No scoping has been brought forward as part of the screening process.

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	No	No scoping has been brought forward as part of the screening process. The site is within a catchment of Historic watercourses and it should be considered in the scoping process if required.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	No scoping has been brought forward as part of the screening process.
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	Yes	Ground water monitoring has been carried out, results are present in BIA section 4.0.
Is the ground investigation informed by a desk study?	Yes	Refer to BIA Appendix D Part 1
Has a site walkover been undertaken?	Yes	Refer to BIA Appendix D Part 1
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Nearby basements have been identified in the 'Design and Access Statement'. Those have been identified to 63,38,37,31,29,14,12,14A,35,58B and 58A Redington Road
Is a geotechnical interpretation presented?	Yes	Refer to BIA Appendix D Part; Section: Geotechnical Engineering Conclusion
Does the geotechnical interpretation include information on retaining wall design?	Yes	Retaining Wall Design Parameters have been provided.
Are reports on other investigations required by screening and scoping presented?	No	However Flood Risk Assessment and Tree Report forms part of the submission
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	A formal GMA has not been carried out

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?	No	No mitigations have been considered
Has the need for monitoring during construction been considered?	No	
Have the residual (after mitigation) impacts been clearly identified?	No	No residual impacts have been identified.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	A ground movement assessment and formal damage category determination is required
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Refer to Flood Risk Assessment and Drainage Strategy
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	No	A ground movement assessment and formal damage category determination is required
Are non-technical summaries provided?	No	

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out by a firm of engineering consultants, Ingleton Wood and the individuals concerned in its production have suitable engineering qualifications. The supplementary Ground Investigation Report has been carried out by Listers Geotechnical Consultants Ltd, and individuals have suitable geotechnical qualifications as required by CPG Basements.
- 4.2. The BIA submissions include land Stability, Hydrogeology and Hydrology screening and relevant site investigations as defined and required in the LBC Planning Guidance document CPG Basements.
- 4.3. The LBC Instruction to proceed with the audit identified that the basement proposal neither involved a listed building nor was adjacent to listed building.
- 4.4. The property is situated within the Redington/Frognaal Conservation Area and consists of 20th century four- storey detached property, including a basement, ground floor, first floor and top floor built into pitched roof. The existing property is dwelling containing 4 self-contained flats.
- 4.5. A new ground floor extension is proposed at the rear of the Flat A property, deepen the existing basement by approximately 1.00m and extend the basement at the rear of the property beneath the new extension. The proposals also include the construction of a lightwell.
- 4.6. It is proposed to construct the basement in hit and miss sequence with the pins being constructed at a maximum of 1.2m width. The basement L shaped base and wall pin will be constructed to a depth of around 1.5m, which will provide a finished floor level of 1.0m below the existing level. A written construction method is provided, and it is accepted that the applicant has demonstrated feasibility of the construction of the proposal.
- 4.7. A site walkover has been carried out on the 14th September 2017. Number of properties were identified as having front lightwells and basements along the Redington Road.
- 4.8. A site specific ground investigation has been carried out on the 14th and 15th September 2017 and consists of three foundation excavation pits and two continuous tube sample boreholes with stem auger follow-on boreholes. The exploratory work has proven Topsoil or Made Ground to a depth of between 0.95m to 1.31m bgl, overlying the Bagshot Formation to the depths between 7.50m and 8.50m (98.95AOD and 102.15m AOD). Claygate Member has been found as the lowest strata to the base of the boreholes at 12.0m bgl (95.45m and 97.65m AOD).
- 4.9. Groundwater monitoring has been undertaken during two site visits on the 22nd September and 19th October 2017 and revealed seepages and standing levels during ground investigation. The

long term monitoring has resulted in 103.50m to 103.60m AOD, which is 6m below street level or approximately 2.50m below the base of the proposed basement.

- 4.10. The proposed basement is to be constructed in the Bagshot Formation, which is understood to be a suitable bearing stratum for conventional shallow foundation at not less than 1.00m below existing ground level or 0.2m into the top of the formation. The raft foundation to be constructed at the depth of 106.45m AOD, which corresponds to 3.20m below existing garden level, and 1.00m below the existing basement level. The allowable ground bearing pressure is recommended to be 125 kPa at this depth.
- 4.11. Outline structural calculations for the basement wall and ground bearing slab have been provided. However, a discrepancy between the calculations and structural drawings exist, where calculations are based on 300mm thick base and wall, while drawings show 275mm thick base and 400mm thick wall. This discrepancy should be amended in order to demonstrate the structural feasibility of the proposal.
- 4.12. Given the determined ground water level a significant water ingress during construction is not anticipated. However it is stated that ground water entry may occur during wetter months, and therefore dewatering is suggested by use of conventional pumping from sump.
- 4.13. Retaining wall design parameters have been presented for both temporary and permanent retaining structures at the side wall and the basement based on the site specific SI.
- 4.14. Heave protection is proposed to the external faces of the piers and to the underside of the slab in form of Clay board or cellcore. It is accepted as a
- 4.15. The nearest surface watercourse is the Leg of Mutton Pond, which is approximately 462m to the north of the site, however the location of the site does not fall into the catchment area of the Hampstead Heath Pond Chain.
- 4.16. There are no current surface water abstraction licences located within 1000m of the site and it is outside of any Source Protection Zone (SPZ).
- 4.17. The applicant has not provided evidence of correspondence with London Underground, however it is accepted that due to shallow excavation and the proximity of the closest underground lines the development will not affect the London Underground Infrastructure.
- 4.18. An outline works programme indicating the main phases and anticipated durations of work has not been provided. This is to be submitted.
- 4.19. A ground movement assessment and formal damage category determination is required in order to demonstrate that the impact on surrounding properties is equal to Burland category 1 or less as specified in CPG Basements.

- 4.20. An Arboricultural Report has been submitted, which describes the impact of the development on the trees located within the influence zone. The proposed construction should be reviewed by LBC's Landscape Officer in regards to potential tree protection requirements.
- 4.21. SUDs proposal have been presented as part of the 'Flood Risk Assessment and Drainage Strategy'. Porous type paving is suggested to promote shallow infiltration and reduce the sizing of a proposed buried soakaway. It is accepted that the SUDs proposal sufficiently demonstrates the feasibility of the proposal to achieve the requirements of the London Plan.
- 4.22. The applicant has not identified that the site is located within an area containing slopes of greater than 7degrees in the screening process. However, BIA states, that the general topography of the area is flat lying, excluding the gradient down to the exposed basement, which is believed to be man-made cutting. While the GSD plans do indicate that the site is on the edge of an area of slopes greater than 7°, it is accepted that the risk of wider slope instability is low, however the presence of nearby slopes should be accounted for in the detailed design and construction method to ensure stability is maintained at all times.
- 4.23. The property is located in Flood Zone 1, and the site has a very low flooding risk from surface water and sewer, reservoirs and fluvial/tidal watercourses. It has been suggested by Thames Water that non-return valve or other suitable device to be installed to avoid the risk of backflow.
- 4.24. Queries and requests for additional information are presented in Appendix 2. The BIA does not meet the requirements of CPG Basements.

5.0 CONCLUSIONS

- 5.1. The BIA and supplemented Ground Investigation Report have been carried out by firms of engineering and geotechnical consultants using individuals who possess suitable qualifications.
- 5.2. The BIA submissions include land Stability, Hydrogeology and Hydrology screening and relevant site investigations.
- 5.3. The basement proposal neither involved a listed building nor was adjacent to listed building.
- 5.4. The property is a four-storey detached property, including a basement and consists of 4 self-contained flats. A new ground floor extension is proposed at the rear of the Flat A property, deepen the existing basement by approximately 1.00m and extend the basement at the rear of the property beneath the new extension. The proposals also include the construction of a lightwell.
- 5.5. An appropriate site specific SI has been carried out consisting of three trial pits and two boreholes.
- 5.6. The proposed basement is to be constructed in the Bagshot Formation and groundwater ingress is not anticipated during construction of the basement.
- 5.7. It is proposed to construct the basement in a hit and miss sequence of an L shaped pins constructed to a depth of around 1.5m, which will provide a finished floor level of 1.0m below the existing level.
- 5.8. An outline structural calculations have been carried out, however structural drawings to be updated in the detailed design stage to reflect structural calculations.
- 5.9. Heave protection is proposed by way of compressible material beneath the basement slab.
- 5.10. It is accepted that nearby rail assets are outside of the zone of influence of the proposed site.
- 5.11. It is accepted that the presence of nearby slopes can be incorporated into the detailed design to allow stability to be maintained during construction.
- 5.12. An outline works programme indicating the main phases and anticipated durations of work to be submitted.
- 5.13. A ground movement assessment and formal damage category determination is required in order to demonstrate that the impact on surrounding properties is equal to Burland category 1 or less as specified in CPG Basements.

- 5.14. An Arboricultural Report has been submitted, which describes the impact of the development on the trees located within the influence zone. The proposed construction should be reviewed by LBC's Landscape Officer in regards to potential tree protection requirements.
- 5.15. Permeable paving and a new buried soakaway are proposed as part of the SUDs strategy.
- 5.16. It is accepted that the development will not impact on the wider hydrogeology of the area and is not in an area subject to flooding.
- 5.17. Given the above it cannot be confirmed that the proposal confirms to the requirements of CPG4. A number of queries have been summarised in appendix 2.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Lough	95 Regington Road	18/04/18	Impact on groundwater	Applicant has demonstrated adequately an impact of the development on hydrogeology

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Programme	An outline works programme indicating the main phases and anticipated durations of work to be submitted.	Open	01/06/18
2	Stability	Impact Assessment on the neighbouring properties and/or below ground services to be assessed by way of formal ground movement assessment.	Open	01/06/18
3	Stability	Consistency is required between the structural design as presented in the drawings and the structural design calculations.	Open	01/06/18

Appendix 3: Supplementary Supporting Documents

None

London

Friars Bridge Court
41- 45 Blackfriars Road
London, SE1 8NZ

T: +44 (0)20 7340 1700
E: london@campbellreith.com

Birmingham

Chantry House
High Street, Coleshill
Birmingham B46 3BP

T: +44 (0)1675 467 484
E: birmingham@campbellreith.com

Surrey

Raven House
29 Linkfield Lane, Redhill
Surrey RH1 1SS

T: +44 (0)1737 784 500
E: surrey@campbellreith.com

Manchester

No. 1 Marsden Street
Manchester
M2 1HW

T: +44 (0)161 819 3060
E: manchester@campbellreith.com

Bristol

Wessex House
Pixash Lane, Keynsham
Bristol BS31 1TP

T: +44 (0)117 916 1066
E: bristol@campbellreith.com

UAE

Office 705, Warsan Building
Hessa Street (East)
PO Box 28064, Dubai, UAE

T: +971 4 453 4735
E: uae@campbellreith.com

Campbell Reith Hill LLP. Registered in England & Wales. Limited Liability Partnership No OC300082
A list of Members is available at our Registered Office at: Friars Bridge Court, 41- 45 Blackfriars Road, London SE1 8NZ
VAT No 974 8892 43