CampbellReith
consulting engineers

Former Spiritualist Temple
Rochester Square, London
NW1 9RY

Basement Impact Assessment
Audit

For

London Borough of Camden

Project Number: 12727-41
Revision: D1

March 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

Document History and Status

Revision	Date	Purpose/Status	File Ref	Author	Check	Review
D1	March 2018	Comment	SOrm-12727-41-050318-Spiritualist Temple-D1.doc	SO	RM	RM

Document Details

Last saved	05/03/2018 15:18
Path	SOrm-12727-41-050318-Spiritualist Temple-D1.doc
Author	S O'Sullivan BEng (Hons)
Project Partner	E M Brown, BSc MSc CGeol FGS
Project Number	12727-41
Project Name	Former Spiritualist Temple, Rochester Square, London, NW1 9RY
Planning Reference	2017/7020/P

Contents

Appendix

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 The Former Spiritualist Temple, Rochester Square, London, NW1 9RY, reference 2017/7020/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 Basement Impact Assessment (BIA) and supplementary information has been produced by those holding suitable qualifications.

1.5. The proposed development involves the partial demolition of an existing church building and the construction of a residential three storey building including a single storey basement level occupying most of the rear of the site.

1.6. The proposed basement structure is to be constructed from reinforced concrete retaining walls and slabs using common basement construction methods.

1.7. A site specific ground investigation has been conducted including recording ground water levels, along with relevant analysis of the soil properties.

1.8. The geology consists of previously worked ground overlaying granular soils and Clay.

1.9. The basement is anticipated to be located below the ground water level, however suitable construction methods have been proposed to allow this to be carried out.

1.10. It has been concluded that the wider ground water environment will not be significantly impacted by the proposed basement.

1.11. Outline structural calculations have been produced for the basement structure.

1.12. An outline draft construction programme updated for the proposed scheme needs to be provided.

1.13. Volumetric change of the soil has been considered in the proposal.

1.14. It has been demonstrated that the proposal will limit damage to the neighbouring properties to no greater than Burland Category 1.

1.15. A flood risk assessment confirms that the property is in a low to medium risk of flooding.

1.16. Green roofs are proposed as part of the surface water management, however further information is required to demonstrate compliance with The London Plan.

1.17. Evidence of consultation with public transportation asset owners has been provided.

1.18. An outline movement monitoring strategy of the neighbouring buildings has been proposed.

1.19. It has not been demonstrated that the proposal adheres to the requirements of CPG4 and other Camden Planning Policy. A schedule of queries for further information is summarised in Appendix 2 of this audit.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 4th January 2018 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for The Former Spiritualist Temple, Rochester Square, London, NW1 9RY, reference 2017/7020/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.
- 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 *"Retention of building with exception to demolition of single storey rear wing; refurbishment for continued community use (Class D1). Erection of two storey rear extension, plus basement, comprising 5 self-contained flats (Use Class C3) comprising 1 x studio and 4 x 2 bed, with associated cycle parking and landscaping including 4no. trees.*

The Audit Instruction also confirmed The Former Spiritualist Temple was not, or was not a neighbour to, listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal on 12th February 2018 and gained access to the following relevant documents for audit purposes:

- BIA Report and Appendices A to F, Symmerteys Ltd, Rev C
- 29112017_1606_Design and Access Statement_Planning
- CMP-Pro-Forma v2.1, Version 01
- Planning Statement December 2017
- Planning Comments and Responses
- Existing and proposed Architectural drawings, November 2017, Spacelab

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Refer last page of BIA and Ground Investigation Report.
Is data required by Cl.233 of the GSD presented?	No	An outline works programme is required
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	No justification statement provided for 'no' answers however screening outcomes are satisfactory.
Is a conceptual model presented?	Yes	
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Appendix D.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Appendix D.

Item	Yes/No/NA	Comment
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Appendix D.
Is factual ground investigation data provided?	Yes	BIA Appendix C.
Is monitoring data presented?	Yes	A single repeat monitoring visit was carried out
Is the ground investigation informed by a desk study?	Yes	BIA Appendix C.
Has a site walkover been undertaken?	Yes	BIA Appendix D.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	BIA Appendix D – Single story basement to adjoining western property.
Is a geotechnical interpretation presented?	Yes	BIA Appendix C.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Retaining wall specific geotechnical properties are provided.
Are reports on other investigations required by screening and scoping presented?	Yes	Ground Movement Assessment and Flood Risk Assessment.
Are the baseline conditions described, based on the GSD?	Yes	BIA Appendix D.
Do the base line conditions consider adjacent or nearby basements?	Yes	BIA Appendix D – Single story basement to adjoining western property.
Is an Impact Assessment provided?	Yes	BIA Appendix D.
Are estimates of ground movement and structural impact presented?	Yes	BIA Appendix D - Ground Movement Assessment – updated with letter from LMB Geosolutions Appendix F.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	BIA Appendix D.

Item	Yes/No/NA	Comment
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Heave protection, green roofs, propping in the temporary condition.
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	Construction method, Ground movement assessment, underpin design and party wall monitoring.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	Mention of green roofs incorporated into the design. However drainage design yet to be finalised.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	Drainage design yet to be finalised.
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 a well-known firm of Geotechnical consultants, LMB Geosolutions Ltd, and the individuals concerned in its production have suitable qualifications.

4.2. Consulting Structural engineers, Symmetrys Limited, have produced supplementary information to support the structural design and construction of the basement proposal.

4.3. The existing property is a double height single storey masonry building with a timber pitched roof previously used as a religious building.

4.4. The proposed development involves the demolition of the single story projection at the rear of the temple and the construction of a single story RC basement occupying most of the available space to the rear of the site. The double story superstructure is likely to be load-bearing masonry with timber joist floors and roof.

4.5. The basement structure is proposed to be approximately 3m deep and constructed from L-shaped RC retaining walls. RC basement slab, two RC internal walls spanning the width of the basement and RC suspended ground floor provide lateral support to the basement walls in the permanent case.

4.6. A site-specific ground investigation was conducted, comprising two boreholes to a depth of 15mbgl, along with recording of ground water along with a single repeat monitoring visit.

4.7. The ground model consists of a layer of Made Ground to depths between 0.65mbgl and 0.8mbgl, overlaying Head Deposits to depths of between 1.5mbgl to 1.75mbgl, overlaying London Clay to depth.

4.8. Groundwater was observed during the drilling process and subsequently in one follow up monitoring visit. During drilling water was recorded at 0.7mbgl and 7.0mbgl BH1. No water was encountered during the drilling of BH2 however, the following morning water was observed at a depth of 3.4mbgl. During the follow up visit water was encountered at 6.58mbgl BH1 and 1.64mbgl BH2. The ground investigation report considers the groundwater to form a thin, laterally continuous aquifer unit within the Head Deposits. This is not regional and a fair assertion is made that the impact of the scheme on groundwater flow within the head deposits will be minimal, as ground water will flow uninterrupted around the basement with any small increase in groundwater level occurring locally against the basement.

4.9. The proposed scheme proposes the use of RC retaining walls constructed in an underpin sequence with lateral restraint provided in both the temporary and permanent cases. Sheet

piling is used to exclude ground water in the temporary case with localised dewatering during excavation and construction of the basement.

4.10. An interpretive geotechnical report has been produced that provides geotechnical design parameters for basement raft, retaining walls, and piled foundations based on the site specific site investigations. A recommendation is made that retaining walls are designed for groundwater pressures in accordance with good design practise and the site-specific hydrogeological conditions.

4.11. Outline structural calculations have been produced for the basement slab under heave loading. Retaining wall calculations are presented that indicate the feasibility of the solution to provide stability in the temporary and permanent case.

4.12. The Construction management plan outlining a draft programme of the proposed works covering key phases and approximate durations needs to be updated to account for the proposed construction method and extent of the proposal.

4.13. A Structural Methodology Statement has been produced. Structural drawings are included in the statement that clearly show the temporary propping required to mitigate lateral movement of the retaining walls.

4.14. It has been identified that as the London clay will experience unloading due to the excavation there is the potential for heave, and it is proposed that the ground bearing basement slab will be designed to resist heave forces which are to be transferred into the retaining walls which are supporting the super structure. This method of resisting heave forces is accepted, however careful consideration should be given to the sequencing of the proposal to ensure heave pressures do not cause damage in the short term prior to the construction of the proposed super structure.

4.15. A ground movement assessment has been produced to calculate a damage category for the neighbouring properties. This has been produced combining settlement as calculated following the method described in CIRIA C580, along with calculated heave values. This was produced for an alternative scheme where a secant piled wall was proposed. The extent of the basement in the current proposal is much smaller, and confirmation that the GMA produced for the previous scheme would contribute to a conservative estimate of ground movements for the proposed scheme. Burland category 1 was calculated for the neighbouring properties of Julian Court and 29-36 Rochester Square. The worst case damage category had been confirmed as being Burland category 2 at the adjoining Western property. However, the current proposal does not include any excavation in this area. It is accepted that the worst case damage category for the current proposal is no greater than Burland category 1.

4.16. A flood risk assessment is provided which indicates the property is located in an area of Low to Medium risk of flooding from surface water and Negligible/low risk of flooding from groundwater. Consideration has been given to the risk of sewer flooding and this was found to be low.

4.17. It is recognised that the proposed works will increase the volume of surface water drainage on the site. Green roofs are to be incorporated in the proposed development to provide some attenuation of the surface water run off to the local drainage system. The BIA acknowledges the drainage design is yet to be finalised, however further details should be submitted to indicate feasibility of the surface water management strategy in accordance with The London Plan.

4.18. Evidence of consultation with public transportation asset owners has been provided, who have confirmed that there are no assets located within the immediate vicinity of the site.

4.19. Monitoring of the neighbouring properties has been proposed during the basement works. A site specific monitoring strategy has been proposed. It is accepted that monitoring will be carried out in accordance to good practise principles.

4.20. A schedule of queries for further information is summarised in Appendix 2 of this audit.

5.0 CONCLUSIONS

5.1. The Basement Impact Assessment (BIA) and supplementary report been carried out by a well-known firm of engineering consultants, and the individuals concerned in its production have suitable qualifications.

5.2. The proposed development involves the demolition of the single story rear projection of an existing church building, the installation of a mezzanine in the retained building and the construction of a residential 3 storey building occupying most of the rear of the site including a single storey basement level.

5.3. The basement structure is proposed to be of RC retaining walls and RC slabs.

5.4. A site specific ground investigation was conducted, comprising boreholes and ground water monitoring.

5.5. The site geology consists of up to 0.8m of Made Ground, overlaying approximately 1m of Head Deposits, overlaying London Clay.

5.6. During the return monitoring visit ground water was recorded at depths of 6.58mbgl and 1.64mbgl at either end of the site. The ground water has been identified as perched water to varying depths within the head deposits, and is not anticipate forming a strategic ground water flow. It has been concluded that the basement may penetrate beneath the ground water level, which is not anticipated to significantly impact on the ground water level.

5.7. Appropriate temporary works have been proposed with propping provided to the retaining walls during construction, with local dewatering within the sheet piled wall which is to act as a barrier to water in the temporary case.

5.8. An appropriate geotechnical interpretation has been produced with engineering properties of the soil for use in the design of the RC retaining walls and basement slab provided. Outline structural calculations have been provided for the basement slab and wall structure.

5.9. An outline draft construction programme needs to be produced for the proposal.

5.10. Heave pressures due to the unloading of the clay soil and are to be resisted by a ground bearing basement slab.

5.11. A ground movement assessment has been produced, it is accepted that the worst case damage will not exceed Burland category of 1 based on a GMA that was calculated for an alternative proposal.

5.12. A flood risk assessment confirms that the property is in a low to medium risk of flooding from surface water.

5.13. The developed area is increasing which will increase the volume of surface water drainage into the sewer system. It is indicated that SUDs will be provided by way of greens roofs, however further details of surface water management strategy is required.

5.14. Evidence of consultation with public transportation asset owners has been provided.

5.15. A movement monitoring strategy of the neighbouring buildings has been proposed.

5.16. It has not been demonstrated that the proposal adheres to the requirements of CPG4 and other Camden planning policy. A schedule of queries for further information is summarised in Appendix 2 of this audit.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Where similar quires have been raised more than once they have only been listed once

Surname	Address	Date	Issue raised	Response
Coral Temple	34b Camden Square, London, NW1 9XA	17/01/2018	Water table affected	The BIA and supporting reports have adequately assessed the characteristics of the ground water and determined that the proposed basement will not significantly affect the wider ground water environment. The construction method chosen adequately takes into account the ground water. See paragraph 4.8.
Coral Temple	34b Camden Square, London, NW1 9XA	17/01/2018	Excavation of the basement may undermine foundations of neighbouring buildings, gardens, and below ground services.	Appropriate temporary works details and construction methodology have been provided by the applicant. Ground movement assessment indicates a damage category no greater than Burland 1 which is acceptable. See paragraph 4.15
Camden Square Conservation Area Advisory Committee	-	25/01/2018	Scheme may adversely affect flooding risk – "Experience of extensive flooding in Julian Court"	An adequate flood risk assessment has been produced which indicates a low to medium level of flood risk from surface water. The assessment of hydrogeological and hydrological impacts of the proposal are deemed to have been adequately carried out.

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Hydrology	Outline details of SUDs strategy required due to potential increase in surface water area to demonstrate compliance with The London Plan.	Open	
2	CMP	An updated outline construction programme in line with the current proposals to be provided.	Open	

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