

7 Rosecroft Ave NW3 7QA

Basement Impact Assessment
Audit

For
London Borough of Camden

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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 7 Rosecroft Ave NW3 7QA (planning reference 2020/4838/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. Whilst the author of the BIA holds suitable qualifications in regard to Land Stability and Hydrological assessments, the Hydrogeological assessment should be completed by an author with qualifications in accordance with LBC guidance.
- 1.5. The planning application is for a single storey structure with a lower ground floor, some 1.50m below ground level.
- 1.6. The BIA includes a Desk Study which contains the majority of information required in accordance with LBC guidance.
- 1.7. A Screening assessment has been completed. A number of queries are raised, as detailed in Section 4.
- 1.8. A site investigation has been undertaken, indicating Made Ground over a sandy clay. Groundwater was encountered at 2.80m below ground level (bgl) although no further monitoring was undertaken. Queries are raised in Section 4 in regard to the ground and groundwater conditions and potential Land Stability and Hydrogeological impacts.
- 1.9. Outline structural information is provided. The BIA and supporting documents provide contradictory information with respect to the proposed foundations and should be revised to be consistent.
- 1.10. Structural calculations should be updated to reflect the geotechnical interpretation; it should be confirmed they have been prepared for the application site and they should be reviewed against the proposed foundation scheme / construction sequence.

- 1.11. It noted that the basement is remote from any houses. The BIA recommends mitigation measures to limit damage to a nearby outbuilding to Negligible (Burland Category 0). This should be confirmed once the queries raised in Section 4 have been addressed.
- 1.12. Impacts to the Hydrological environment are stated to be mitigated by the provision of permeable paving and a green roof. Sufficient assessment to demonstrate impacts have been mitigated should be presented.
- 1.13. It cannot be confirmed that the BIA complies with the requirements of CPG: Basements until the queries raised in Section 4, summarised in Appendix 2, are addressed.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 10 May 2021 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 7 Rosecroft Ave, London NW3 7QA.
- 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
- Camden Local Plan 2017 - Policy A5 Basements.
 - Camden Planning Guidance (CPG): Basements. January 2021.
 - Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.
- 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 garden outbuilding (including excavation) to provide pavilion for recreation, home office and storage, following demolition of existing outbuilding."*

The Audit Instruction also confirmed 7 Rosecroft Ave and its neighbours are not listed buildings.

- 2.6. CampbellReith accessed LBC's Planning Portal on 28/05/2021 and gained access to the following relevant documents for audit purposes:
- Basement Impact Assessment Report (BIA) ref ENG/210111, Rev B, prepared by Eng17, dated 08/05/2021 along with associated Appendices

- (A) Sequencing, Temporary Works sketch Proposals
- (B) Structural Calculations
- (C) Arboricultural Investigation Report by Parsons Tree Care
- (D) Historic Borehole Records
- (E) Site Investigation and Factual Report by Chelmer Global
- Structural Strategy Report (SSR)
- Planning Application Drawings consisting of
 - Location Plan by William Tozer Architects
 - Existing Plans by William Tozer Architects
 - Proposed Plans by William Tozer Architects and Eng17 Consulting Engineers
- Consultation responses

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	No evidence of contribution to BIA by CGeol. Author chartered with Engineers Ireland
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	Although no dimensioned drawings to show relationship between basement proposals and neighbouring building at 9 Rosecroft Gardens. Temporary works drawings appear to contradict BIA and arboricultural report with respect to foundations.
Are suitable plan/maps included?	Yes	Figures 1 to 7 within BIA
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	No	Drawings do not show relationship between basement proposals and neighbouring building at 9 Rosecroft Gardens
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	Refer Table 3.2 of BIA – Q2, Q4, Q5, Q8, Q10, Q13
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	Refer Table 3.1 of BIA – Q1b, Q2
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Refer Table 3.3 of BIA
Is a conceptual model presented?	No	Refer Appendix E of BIA. However, brief and inconsistent with respect to ground and groundwater conditions

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	Screening to be reviewed. No consideration of differential foundation depths between proposed and existing structures
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	No	Refer Table 4.1 of BIA – should address Q2 of Screening noting especially springlines on boundary of Bagshot and Claygate Member; noted that dewatering is stated as potentially being necessary.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Refer Table 4.1 of BIA
Is factual ground investigation data provided?	Yes	Refer Appendix E
Is monitoring data presented?	No	No - groundwater monitoring is proposed
Is the ground investigation informed by a desk study?	No	
Has a site walkover been undertaken?	No	Not noted
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	No basements identified
Is a geotechnical interpretation presented?	Yes	
Does the geotechnical interpretation include information on retaining wall design?	Yes	Refer Appendix E
Are reports on other investigations required by screening and scoping presented?	No	Structural calculation pack should be confirmed as relevant to the site. Sufficient assessment to address potential impacts identified to be provided.
Are the baseline conditions described, based on the GSD?	No	Ground and groundwater conditions to be clarified

Item	Yes/No/NA	Comment
Do the baseline conditions consider adjacent or nearby basements?	No	None identified
Is an Impact Assessment provided?	Yes	Queries as Section 4
Are estimates of ground movement and structural impact presented?	No	Ground movement and damage assessment is noted as beyond scope of report
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	Queries as Section 4
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Section 7 of BIA –however, queries as Section 4
Has the need for monitoring during construction been considered?	No	No monitoring is proposed
Have the residual (after mitigation) impacts been clearly identified?	Yes	Section 7 of BIA –however, queries as Section 4
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Ground and groundwater conditions to be clarified; assessment of movements to confirm impacts to neighbouring building.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	Groundwater conditions to be clarified.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	Queries as Section 4
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	No	Section 7.1 of BIA indicates Category 1 to Category 2 potential damage; Section 8 indicates Category 0.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out by structural engineering consultants Eng17 Ltd the author is identified as Paul Cullen BA BAI (Hons) CEng MIEI who is a Chartered Engineer. The author's qualifications are recognised by the Institution of Civil Engineers as equivalent to CEng MICE and satisfy the requirements of LBC's planning guidance with respect to Land Stability and Hydrogeological assessments. The Hydrogeological assessment is required to be undertaken by a Chartered Geologist CGeol FGS.
- 4.2. The proposed development can be considered as two structures, a ground level private workspace/office and a small lowered basement enclosed garden play area. The proposed basement is located at the rear of 7 Rosecroft Avenue garden and abuts the boundary garden walls to numbers 5 and 9 Rosecroft Avenue and the rear boundary to 15 Hollycroft Avenue. There is a step down in the garden level of approximately 900mm between 7 Rosecroft Ave and 15 Hollycroft Avenue.
- 4.3. The proposed development consists of a single storey construction formed by demolition of an existing outbuilding and excavation to 1.5m below ground level (bgl) within the rear garden. The retaining walls are to be constructed in reinforced concrete sections in an underpin style method and sequence, supported on screw piles. The basement floor slab is to be formed in suspended reinforced concrete.
- 4.4. The BIA includes a Desk Study which contains the majority of information required in accordance with LBC guidance.
- 4.5. A Screening assessment has been completed. The following queries are raised:
- 4.6. In regard to the Land Stability Screening assessment, presented in Table 3.2 of the BIA:
- Q2, change of slope at site boundary. A response addressing the re-profiling, change in levels and requirement for retaining walls would be appropriate.
 - Q4, wider hillside setting. The GSD Figure 16 indicates the area immediately in the vicinity of the proposed development to be at between $>7^{\circ}$ to $>10^{\circ}$.
 - Q5, is London Clay the shallowest strata at the site. A response addressing the shallowest natural strata would be appropriate.
 - Q8, proximity to watercourses. A number of wells and a springline are mapped within 100m of the site and should be considered, noting especially the springline on the boundary of the Bagshot Formation and Claygate Member.
 - Q10, underlying aquifer. The site is correctly stated to overlie an aquifer. However, further clarification is required in regard to the ground and groundwater conditions, noting especially the mapped springline on the boundary of the Bagshot Formation and Claygate Member, and the potential to impact both the Hydrogeological environment and Land Stability (e.g. during

construction). Related responses within the BIA indicate that some form of groundwater control may be required and the site investigation report indicates groundwater levels may be variable, although no monitoring has been undertaken.

- Q13, differential depth with neighbouring foundations. A response addressing the adjacent outbuildings and boundary wall foundations would be appropriate.

4.7. In regard to the Hydrogeological Screening assessment, presented in Table 3.1 of the BIA:

– Q1b, groundwater level in relation to depth of basement. Whilst the response indicates the basement will be above groundwater level, related responses within the BIA indicate that some form of groundwater control may be required and the site investigation report indicates groundwater levels may be variable, although no monitoring has been undertaken.

- Q8, proximity to watercourses. A number of wells and a springline are mapped within 100m of the site and should be considered, noting especially the springline on the boundary of the Bagshot Formation and Claygate Member.

4.8. A site investigation has been undertaken. The BIA has identified that the existing ground conditions are Made Ground over sandy clay, proven in the single borehole undertaken to 3.0m bgl. Groundwater was encountered at the base of the borehole with a standing level of 2.9m bgl. No monitoring was carried out and the ground investigation report indicates that groundwater levels may be variable.

4.9. The BIA inconsistently discusses the underlying geology and groundwater conditions, which should be clarified. Consideration of potential Land Stability and Hydrogeological impacts in relation to the ground and groundwater conditions should be addressed, in relation to both the temporary condition, during construction, and the permanent condition.

4.10. The BIA indicates that basement retaining walls will be formed in reinforced concrete utilising underpin style sequencing and methods. An arboriculturalist's report advises how impacts to trees can be avoided. However, this references pad foundations while the BIA advises the new foundations are piled foundations and the basement slab is suspended. The BIA refers to screw piles whilst the temporary works drawings indicate reinforced concrete piles. Construction information should be confirmed and consistently referenced.

4.11. Structural calculations for the substructure are presented, although it is noted that the project is incorrectly referenced on the calculation pages. The angle of internal friction adopted for the design of the retaining walls does not reflect that recommended in the geotechnical interpretation and should be amended, or justification for the enhanced value provided. It should be confirmed that the calculations relate to 7 Rosecroft Avenue.

4.12. The proposed basement is located approximately 24m from the main house to 7 Rosecroft Ave and 24m from the house to 15 Hollycroft Ave. Due to the relatively shallow depth of excavation and the distance to the adjacent houses, the excavation should not impact the houses, subject

to the BIA confirming the ground and groundwater conditions. Potential impacts to slope stability should be considered, including changes in level and retaining walls with the boundaries to neighbouring plots.

- 4.13. The closest structure is an adjacent outbuilding to the rear garden of 9 Rosecroft Avenue, indicated to be of timber construction. The BIA states that a building damage assessment is beyond their scope of the report but that expected damage to the outbuilding can be assumed to be Negligible (Burland Category 0) due to the limited extent of the excavation. Section 7.2 of the BIA outlines mitigation measures that should be adopted to safeguard the stability of the outbuildings. However, it is noted that Section 7.1 indicates potential damage could be Slight (Burland Category 2). Although mitigation measures are described to limit damage, details of existing garden wall foundations and any access limitations for the piling rigs are not contained in the current documents.
- 4.14. It is recommended that BIA considers the form of construction of the neighbouring outbuilding, confirming how susceptible it will be to movements and confirming assessment of damage likely to be sustained, which should be consistently reported throughout the BIA.
- 4.15. The impermeable site area would increase as a result of the proposed development. Impacts to the Hydrological environment are stated to be mitigated by the provision of permeable paving and a green roof. Sufficient assessment to demonstrate impacts have been mitigated should be presented, noting that any location of concentrated discharge to ground should consider related hydrogeological and stability issues, considering the underlying conditions and the wider hillside setting.

5.0 CONCLUSIONS

- 5.1. The Hydrogeological assessment should be completed by an author with qualifications in accordance with LBC guidance.
- 5.2. The BIA includes a Desk Study which contains the majority of information required in accordance with LBC guidance.
- 5.3. A Screening assessment has been completed. A number of queries are raised, as detailed in Section 4.
- 5.4. Queries are raised in Section 4 in regard to the ground and groundwater conditions and potential Land Stability and Hydrogeological impacts.
- 5.5. Outline structural information is provided. The BIA and supporting documents provide contradictory information with respect to the proposed foundations and should be revised to be consistent.
- 5.6. Structural calculations should be updated to reflect the comments in Section 4.
- 5.7. The BIA recommends mitigation measures to limit damage to a nearby outbuilding to Negligible (Burland Category 0). This should be confirmed once the queries raised in Section 4 have been addressed.
- 5.8. Impacts to the Hydrological environment are stated to be mitigated by the provision of permeable paving and a green roof. Sufficient assessment to demonstrate impacts have been mitigated should be presented.
- 5.9. It cannot be confirmed that the BIA complies with the requirements of CPG: Basements until the queries raised in Section 4, summarised in Appendix 2, are addressed.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Redington Frognal Neighbourhood Forum	NA	18/03/21	Potential for damage to tree roots in adjoining property	Hand digging for foundations, plus the use of screw piles with ability to adjust position locally on site mitigates the risk of damage to tree roots.

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	Author qualification requirements	Open – as 4.1	
2	Land Stability / Hydrogeology	Screening assessment to be reviewed	Open – as 4.5, 4.6, 4.7	
3	Land Stability / Hydrogeology	Ground and groundwater conditions to be confirmed, and potential impacts addressed and mitigated, as required.	Open – as 4.8, 4.9, 4.12, 4.15	
4	Land Stability	Arboriculturalist's report, BIA and construction sequence drawings inconsistent with respect to foundations	Open – as 4.10	
5	Land Stability	Structural proposals and calculations to be confirmed	Open – as 4.11	
6	Land Stability	Ground movements, slope stability and damage assessment	Open – as 4.12 – 1.14	
7	Hydrology/ Hydrogeology	Sufficient assessment to demonstrate impacts have been mitigated should be presented.	Open – as 4.15	

Appendix 3: Supplementary Supporting Documents

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