

26 Netherall Gardens

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 26 Netherhall Gardens (planning reference 2019/1515/P). The basement is considered to fall within Category C 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) has been carried out by Sinclair Johnston and Partners and the authors are appropriately qualified.
- 1.5. The proposed development includes demolition of the existing garage block and construction of a three storey apartment block plus basement level.
- 1.6. Although the BIA states the site is within a wider hillside setting of <7 degrees, topographic plans indicate a change in elevation across the site itself of >7 degrees, currently maintained as both slopes and retaining structures. Impacts upon retaining structures, notably at the top of the rear garden, should be considered.
- 1.7. The BIA states that the development will be constructed in and founded upon unproductive strata. Published geological data indicates the site is at or close to the outcrop boundary of a secondary aquifer. Groundwater was encountered during the site investigation. Considering the size of the proposed basement and the absence of immediately neighbouring basements it is accepted that there will be no impact to the wider hydrogeological environment.
- 1.8. Groundwater is expected to be encountered during construction. It is stated that a secant piled wall will be utilised to reduce dewatering requirements. It is noted that underpinning will be undertaken and the strategy for groundwater control to ensure stability should be provided.
- 1.9. Construction methodology and temporary works information is provided. Geotechnical design parameters have been presented. The length / designs of the proposed secant piles should be provided.
- 1.10. A ground movement assessment (GMA) has not been carried out for the current proposal. The BIA assumes that the current proposal will keep impacts to neighbouring structures within Burland Category 1 (Very Slight). A GMA should be carried out that considers the specific

development, including secant piled retaining walls, underpinning and the cantilevered RC wall adjacent to 24 Netherhall Gardens.

- 1.11. Impacts to retaining walls, slopes, the highway and underlying utilities should be confirmed within the GMA.
- 1.12. An outline construction programme should be provided.
- 1.13. The increase in impermeable areas is inconsistently presented between BIA documents. The change in impermeable site area should be confirmed and sufficient assessment presented to demonstrate that impacts will be mitigated within policy criteria. The final drainage design should be agreed with LBC and Thames Water.
- 1.14. Queries and requests for further information are discussed in Section 4 and summarised in Appendix 2. Until these are addressed the BIA does not comply with the requirements of CPG: Basements.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 16 April 2019 to carry out a Category C Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 26 Netherhall Gardens, NW3 5TL.
- 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. March 2018.
 - 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 *"Erection of 3 storey extension plus basement to existing property to provide 4 flats (2x1-bed and 2x2-bed) (Class C3) with rear roof terraces and refuse and cycle store at the front, following demolition of 2 storey garage extension and 1-bed flat."*
- 2.6. CampbellReith accessed LBC's Planning Portal on 10 June 2019 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Parts 1-8 prepared by Sinclair Johnston and Partners (Reference 8240, latest revision D dated March 2018);
- Structural Design and Construction Statement prepared by Sinclair Johnston and Partners (Reference 8240, latest revision E dated March 2018);
- Arboricultural Assessment undertaken by Gifford Tree Service, dated 23rd May 2019;
- Arboricultural report prepared by Crown Consultants, dated 1st February 2019;
- Design and access statement by Squire and Partners (Reference 18059, dated March 2019)
- Planning Application Drawings consisting of
Existing Plans and Elevations dated June 2019 (Reference: G100_P_AL_001, JA12_P_00_001, JA12_P_LG_001, JA12_P_01_001, JA12_P_02_001, J12_E_W_001, JA12_E_W_002, JA12_E_S_001, JA12_E_N_001, JA12_E_E_001, JA12_S_AA_001)

Demolition Plans and sections dated May 2019 (Reference: JC20_P-00-001, JC20_P_LG_001, JC20_E_W_001, JC20_E_S_001, JC20_E_N_001, JC20_E_E_001)

Proposed Plans and Elevation dated May 2019 (Reference: C645_P_00_001, C645_P_LG_002, C645_P_01_001, C645_P_02_001, C645_P_RF_001, C645_E_W_001, C645_E_W_002, C645_E_S_1, C645_E_N_1, C645_E_E_1, C645_S_AA_001, C645_S_BB_001, G251_BS_W_001)
- Planning Comments and Response.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	
Is data required by Cl.233 of the GSD presented?	No	Outline construction programme; utilities search information.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon stability, hydrogeology and hydrology?	No	Outline groundwater control strategy.
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?	No	Consideration of the site topographic plan and the change in elevation across the site indicating a general slope of >7 degrees.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Is a conceptual model presented?	Yes	Section 8.2 of the BIA.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	Consideration of impacts to slopes / retaining structures.

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	Yes	
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	No immediately adjacent basement structures.
Is a geotechnical interpretation presented?	No	
Does the geotechnical interpretation include information on retaining wall design?	Yes	
Are reports on other investigations required by screening and scoping presented?	Yes	
Are the baseline conditions described, based on the GSD?	No	Consideration of slopes / retaining structures: clarification of changes in impermeable site area.
Do the base line conditions consider adjacent or nearby basements?	Yes	No immediately adjacent basement structures.
Is an Impact Assessment provided?	Yes	However, GMA is not development specific; changes in impermeable site area and SUDs strategy to be clarified.

Item	Yes/No/NA	Comment
Are estimates of ground movement and structural impact presented?	Yes	As above, updated GMA required.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	No	GMA is not development specific; changes in impermeable site area and SUDs strategy to be clarified.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	GMA is not development specific; changes in impermeable site area and SUDs strategy to be clarified.
Has the need for monitoring during construction been considered?	Yes	Monitoring strategy to be reviewed based on updated GMA.
Have the residual (after mitigation) impacts been clearly identified?	No	GMA is not development specific; changes in impermeable site area and SUDs strategy to be clarified.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	GMA is not development specific; impacts to slopes / retaining structures, highway and utilities to be considered.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	Changes in impermeable site area and SUDs strategy to be clarified.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	GMA is not development specific; changes in impermeable site area and SUDs strategy to be clarified.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	However, GMA is not development specific; impacts to slopes / retaining structures, highway and utilities to be considered.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out by Sinclair Johnston and Partners and the authors are appropriately qualified.
- 4.2. It is proposed to demolish the existing side extension to a three storey detached house, comprising of a 2 storey garage extension and 1-bed flat, to construct a new three storey extension and a single storey basement under half the footprint of the new extension. The lowest basement level will be at +66.22m OD (3.20m bgl).
- 4.3. The site level varied between approximately + 72.00m and +78.00m OD. Although the BIA states the site is within a wider hillside setting of <7 degrees, topographic plans indicate a change in elevation across the site itself of >7 degrees, currently maintained as both slopes and retaining structures. Impacts upon retaining structures, notably at the top of the rear garden, should be considered.
- 4.4. The BIA states the underlying ground conditions comprise 0.60m of Made Ground over London Clay proven to 20.00m below ground level (bgl). However, the ground investigation data presented that the Made Ground on site may be up to 1.50m in thickness. It should also be noted that from the soil description and insitu testing provided in the borehole records, and published geological records indicating the close proximity of the Claygate member, the Made Ground may be underlain by Claygate member overlying London Clay.
- 4.5. Groundwater was monitored at 1.14m bgl (shallowest). This groundwater is expected to flow in an east-west direction toward Netherhall Gardens, given the topography of the site. The Claygate Member is designated a secondary aquifer; the London Clay is designated unproductive strata. Considering the size of the proposed basement and the absence of immediately neighbouring basements, and the direction of groundwater flow, it is accepted that there will be no impact to the wider hydrogeological environment.
- 4.6. It is understood that the existing foundation to main building of 26 Netherhall Gardens would be supported using underpinning. A bottom-up method of construction is proposed for basement construction and for construction into the rear garden slope utilising embedded secant piled retaining walls. Whilst geotechnical design parameters have been provided, it is noted that the embedment depth of the secant pile wall for the current proposal was not provided. It is unclear whether the previously proposed pile lengths of 8.60m and 11.10m (with an embedment length of 4.5m) are still applicable. It is requested that an indicative design for the wall is provided, to validate that the design is sufficient to resist any slope instability in the short and long term, and to allow sufficient ground movement assessment (GMA) to be undertaken.

- 4.7. Groundwater is expected to be encountered during construction. It is stated that a secant piled wall will be utilised to reduce dewatering requirements. It is noted that underpinning will be undertaken and the strategy for groundwater control to ensure stability should be provided.
- 4.8. A ground movement assessment (GMA) has not been carried out for the current proposal. The assessment presented is for a previous proposal and the BIA assumes that the current proposal will keep impacts to neighbouring structures within Burland Category 1 (Very Slight). A GMA should be carried out that considers the specific development, including secant piled retaining walls, underpinning and the cantilevered RC wall adjacent to 24 Netherhall Gardens.
- 4.9. Impacts to retaining walls, slopes, the highway and underlying utilities should be confirmed within the GMA. Utilities information should be obtained, noting that asset specific protection agreements may need to be entered into.
- 4.10. The monitoring strategy proposed should be reviewed and revised as applicable to be consistent with the revised GMA.
- 4.11. It should also be noted that dewatering activities carried out for an extended period of time may lead to settlement issues. This should be taken into consideration while preparing the GMA, if applicable.
- 4.12. An outline construction programme should be provided.
- 4.13. The BIA states there will be an increase in impermeable site area and that SUDs will be adopted to mitigate impacts to the hydrological environment. The increase in impermeable areas is inconsistently presented between documents. The change in impermeable site area should be confirmed and sufficient assessment presented to demonstrate that the proposed SUDs is feasible and will mitigate impacts to within policy criteria. The final drainage design should be agreed with LBC and Thames Water.
- 4.14. It is accepted that the proposed development is not in an area prone to flooding.

5.0 CONCLUSIONS

- 5.1. The BIA authors are appropriately qualified.
- 5.2. The proposed development includes demolition of the existing garage block and construction of a three storey apartment block plus basement level.
- 5.3. Although the BIA states the site is within a wider hillside setting of <7 degrees, topographic plans indicate a change in elevation across the site itself of >7 degrees. Impacts upon slopes and retaining structures, notably at the top of the rear garden, should be considered.
- 5.4. Groundwater was encountered during the site investigation. Considering the size of the proposed basement and the absence of surrounding basements it is accepted that there will be no impact to the wider hydrogeological environment.
- 5.5. It is proposed to carry out a bottom-up construction facilitated by the installation of secant piled retaining walls. The existing main building would be supported by underpinning existing foundations. Outline secant pile wall designs should be presented.
- 5.6. A GMA should be carried out that considers the specific development, including secant piled retaining walls, underpinning and the cantilevered RC wall adjacent to 24 Netherhall Gardens.
- 5.7. Impacts to retaining walls, slopes, the highway and underlying utilities should be confirmed within the GMA.
- 5.8. An outline construction programme should be provided.
- 5.9. The change in impermeable site area should be confirmed and sufficient assessment presented to demonstrate that impacts will be mitigated to within policy criteria. The final drainage design should be agreed with LBC and Thames Water.
- 5.10. Queries and requests for further information are summarised in Appendix 2. Until these are addressed the BIA does not meet the requirements of CPG: Basements.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments*

Surname	Address	Date	Issue raised	Response
Amery, Mark	-	29.05.19	Concern regarding subsidence caused by the construction of a double basement and related structural stability of surrounding buildings and impact on hydrogeology	The current proposal although not a double basement, would require considerable amount of excavation. Appropriate information has been requested within the audit to address issues causing concern.
Bacall, Billie	-	24.05.19	Slope stability, stability.	Relevant issues are addressed in the audit and further information requested where necessary.
Williams, Stephen	-	03.05.19	Scale of development and loss of greenery	The impact due to the scale of the development is addressed in the audit, and further information requested where relevant.

*Kindly note that other objections raising concern over similar issues to the above and those that are beyond the scope of the BIA are not listed.

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	Utility information to be provided and assessed for impacts.	Open	
2	BIA	Outline construction programme to be provided.		
3	Land Stability	Assessment of overall change in elevation across the site and consideration of: slope stability issues; impacts upon existing retaining structures.	Open	
4	Land Stability	Indicative design of the proposed secant piled retaining walls required.	Open	
5	Land Stability	A GMA should be carried out that considers the specific development, including secant piled retaining walls, underpinning and the cantilevered RC wall adjacent to 24 Netherhall Gardens. Impacts to retaining walls, the highway and underlying utilities should be confirmed within the GMA.	Open	
6	Land Stability	The strategy for groundwater control to ensure stability (during underpinning) should be provided. Consideration of any settlement issues cause by dewatering should be addressed in GMA.	Open	
7	Hydrology	The increase in impermeable areas is inconsistently presented between documents. The change in impermeable site area should be confirmed and sufficient assessment presented to demonstrate that the proposed SUDs is feasible and will mitigate impacts to within policy criteria.	Open	

Appendix 3: Supplementary Supporting Documents

None

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