

Branch Hill House, Hampstead Heath,
London
NW3 7LS

Basement Impact Assessment
Audit

For
London Borough of Camden

Project Number: 13693-46

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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 (BIA) submitted to support a variation to the Planning permission granted for Branch Hill House, Hampstead Heath, London NW3 7LS, Camden Reference 2021/5377/P (Previous planning reference 2019/6354/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. The Audit for the consented scheme under planning reference 2021/5377/P was reported in CampbellReith audit report GKemb12985-95-060320-Branch Hill House-F1.docx, issued in March 2020.
- 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 has been prepared by Ridge & Partners LLP with supporting documents prepared by Stanhope Gate Architecture. In the revised BIA, the authors' qualifications have been demonstrated to be in accordance with LBC guidance in regards to land stability and hydrological assessments. Whilst the hydrogeological assessment has not been undertaken by a chartered geologist, considering the proposed development and monitored groundwater level, the assessment has been accepted.
- 1.5. The site currently comprises a three-storey manor house with a single storey basement and an abutting two-storey residential block constructed in the 1960s. The proposed development comprises the demolition of the 1960s structure and the construction of a new three to five storey block of residential dwellings with a single storey basement.
- 1.6. The site investigation and BIA have been informed by a desk study broadly in accordance with LBC guidance.
- 1.7. A site investigation indicates the ground conditions to comprise Made Ground underlain by the Bagshot Formation and Claygate Member. Groundwater was encountered during the investigation at depth below the proposed basement formation level.
- 1.8. The single storey basement is to be formed with secant piled walls forming the retaining walls. Where the basement abuts Branch Hill House, the basement wall is to be formed by reinforced concrete underpinning. Interpretative geotechnical information and temporary works information are provided, including sequencing, propping and structural calculations.

- 1.9. The Ground Movement Assessment (GMA) indicates that damages occurring at neighbouring properties will be within the limits set by the Camden Planning Guidance for basements.
- 1.10. The BIA provides a proposal for monitoring structural movements to ensure construction is controlled and impacts are limited to those predicted. This should be reviewed once an Engineer and Contractor are appointed.
- 1.11. Tributaries of the lost River Westbourne runs to the south and north of the site. However, no evidence of these was found on site. The BIA concludes the basement will not encounter groundwater and contiguous piles will not significantly impede groundwater flow. The BIA concludes there will be no impact to the wider hydrogeological environment.
- 1.12. The site is identified as being at 'very low' risk of flooding.
- 1.13. The proposed scheme will increase the proportion of impermeable site areas. The BIA indicates that SUDS will be adopted to mitigate any impact to the hydrological environment and a drainage strategy is provided. Final proposed drainage design will require approval from LBC and Thames Water.
- 1.14. The BIA meets the requirements of Camden Planning Guidance: Basements.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 17th March 2022 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted to support a variation to the planning permission for Branch Hill House, London NW3 7LS, Camden Reference 2021/5377/P (previous planning reference 2019/6354/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:
- 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; and,
 - 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 planning portal describes the proposal as: "*Variation of Condition 2 (Approved Drawing) Condition 13 (Cycle Parking) and Condition 24 (Housing) granted under reference 2019/6354/P dated 11/08/21 for change of use of Branch Hill House from care home (Use Class C2) to residential (Use Class C3) and associated external alterations, demolition of the 1960s care home extension and erection of replacement building, including basement, comprising residential accommodation (Use Class C3), ancillary plant, access and servicing and car parking.*"
- 2.6. The planning portal also confirmed the site lies within the Hampstead Conservation Area. The building on site is not listed but the Grade II listed Lodge House is located to the southeast of

the site and the Grade II listed Branch Hill Estate (Spedan Close), a 1970s housing development, is located west of the subject building.

- 2.7. A planning application (2019/6354/P) was already submitted for this property and CampbellReith produced an audit in 2021 concluding that the original BIA met the CPG requirements for basement. However the proposed scheme has changed and as such a new audit is required.
- 2.8. CampbellReith were provided the following relevant document for audit purposes on 22nd of March 2022:
- Design and Access Statement – Addendum by Stanhope Gate Architecture, dated October 2021.
 - Basement Impact Assessment (version 1.3, project number 5008338), dated 3 December 2021 by Ridge & Partners LLP.
 - Existing and Proposed Plans, Elevations and Section drawings and Site Location Plan dated July - December 2019 and October 2021 by Stanhope Gate Architecture.
 - Planning Consultation Responses as detailed in Appendix 1.
- 2.9. The information submitted as part of the original and previous planning applications has also been considered where still valid.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	The land stability and hydrological assessments have been authored or reviewed by CEng MICE. Whilst the hydrogeological assessment has not been undertaken by a CGeol FGS, it is accepted.
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 plans/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	BIA Report, Section 4.2.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Report, Section 4.1.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Report, Section 4.3.
Is a conceptual model presented?	Yes	Described within the BIA text in sufficient detail.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Report, Section 5.2 and 5.3.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Report, Section 5.2.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	Although not referred to in the Scoping section, the Surface and Foul Water Drainage Strategy states that a below ground attenuation tank will be included as part of the proposed development. A Flood Risk Assessment has been provided for review. (GKemb12985-95-060320-Branch Hill House F1)
Is factual ground investigation data provided?	Yes	Ground Investigation Report dated July 2019 by Ridge & Partners LLP.
Is monitoring data presented?	Yes	Ground Investigation Report, Section 6.3 and Appendix 6.
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	Yes	Site walkover 14 th March 2019.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	The adjacent manor house includes a single storey basement.
Is a geotechnical interpretation presented?	Yes	BIA Report, Section 7.1 and Ground Investigation Report, Section 8.
Does the geotechnical interpretation include information on retaining wall design?	Yes	

Item	Yes/No/NA	Comment
Are reports on other investigations required by screening and scoping presented?	Yes	Ground Movement and Damage Impact Assessment, Structural Engineer's Statement and Calculations, Utility and Infrastructure Consultations Report, Flood Risk Assessment Report, Surface and Foul Water Drainage Strategy. As detailed in the previous CampbellReith audit (GKemb12985-95-060320-Branch Hill House F1.
Are 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	BIA Report, Section 8.
Are estimates of ground movement and structural impact presented?	Yes	Ground Movement and Damage Impact Assessment Report (BIA Report, Appendix 4). No assessment of underpinning presented.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	FRA and Drainage Strategy noted (not referenced at Scoping).
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Structural sequencing and propping; structural monitoring; SUDS strategy.
Has the need for monitoring during construction been considered?	Yes	BIA Report, Section 1.8 and 7.4.
Have the residual (after mitigation) impacts been clearly identified?	Yes	No impacts identified to surrounding environments or structures. GMA does not consider effects of underpinning on adjacent manor house, although this is owned by Applicant and is to be refurbished.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	GMA to be revised. GMA does not consider effects of underpinning on adjacent manor house, although this is owned by Applicant and is to be refurbished.

Item	Yes/No/NA	Comment
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	SUDS Strategy.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	As above.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	However, subject to GMA revision. GMA does not consider impacts from underpinning to adjacent manor house, although this is owned by the Applicant and will be refurbished.
Are non-technical summaries provided?	Yes	Section 1 of the BIA.

4.0 DISCUSSION

- 4.1. The BIA has been prepared by Ridge & Partners LLP with supporting documents prepared by Stanhope Gate Architecture. In the revised BIA, the authors' qualifications have been demonstrated to be in accordance with LBC guidance in regards to land stability and hydrological Assessments. Whilst the hydrogeological assessment has not been undertaken by a chartered geologist, considering the proposed development and monitored groundwater level, the assessment has been accepted.
- 4.2. The site currently comprises a three-storey residential manor house (Branch Hill Manor House) with a single storey basement constructed in the 1860s and an abutting two-storey residential block constructed in the 1960s. At the rear of the plot (southwestern end) a car park basement is present below the garden.
- 4.3. The proposed development comprises the demolition of the 1960s structure and the construction of a new three to five storey block of residential dwellings with a single storey basement beneath. Branch Hill House will be preserved and renovated. Following design development, basement footprint has been revised to rationalize construction of perimeter piles and waterproofing. The revised basement footprint proposes a simplified perimeter that reduces the number of awkward shapes. As a result, the plant space in the basement in the north eastern area has increased in size. In order to accommodate the required structure and service zone at ground floor level, the basement has been deepened and it will be founded at +115.495 (4.25m bgl).
- 4.4. As mentioned in a previous audit report (GKemb12985-95-060320-Branch Hill House F1), the site investigation and BIA have been informed by a desk study broadly in accordance with the GSD Appendix G1. A Utility and Infrastructure Consultations Report has been prepared by Milieu Consult with regards to underground infrastructure.
- 4.5. Screening and scoping assessments have been undertaken. In the revised BIA, the screening assessment has not considered the potential presence of tributaries of the lost River Westbourne to the south and north of the site. However, it is accepted there is no evidence of these features in the site investigation.
- 4.6. An increase in impermeable site area, which is identified within the Drainage Strategy, has not been referenced in the revised screening assessment. However, it is noted that mitigation in the form of SUDS is described within the drainage strategy.
- 4.7. A site investigation was undertaken in April 2019 comprising three cable percussive boreholes drilled to a maximum depth of 30m bgl. The investigation identified varying thicknesses of Made Ground (between 0.1 and 1.65m bgl) underlain by the Bagshot Formation (described as clayey, silty fine and medium sand interbedded with thinly bedded sandy clay) and the Claygate Member.

Groundwater was encountered during the investigation at depths between 10.00m and 26.10m bgl. Groundwater monitoring was undertaken in two occasions between April and May 2019 and revealed groundwater to be present between 8.80 and 14.60m bgl. It is accepted that groundwater will be below basement formation level and that there will be no impact to the wider hydrogeological environment.

- 4.8. Interpretative geotechnical information broadly in accordance with the GSD Appendix G3 is presented.
- 4.9. The single storey basement is to be formed with secant piled walls forming the retaining walls. Where the basement abuts Branch Hill House, the basement wall is to be formed by reinforced concrete underpinning. Temporary works information is provided, including sequencing, propping and structural calculations. It is noted that underpinning is proposed to be formed in three stages.
- 4.10. A Ground Movement Assessment (GMA) is presented that considers the movements relating to the proposed basement construction and the impacts upon nearby structures.
- 4.11. Although the method and calculation presented in the GMA are not completely clear, it is accepted that damage to the nearest neighbouring properties, which are those along Spedan Close and c. 25m away from the proposed basement, can be limited within Category 1 of the Burland Scale. However, the Branch Hill Manor House will share a party wall with the proposed development and multiple stages of underpinning will be required in combination with an embedded retaining wall installation and excavation. This construction method has the potential to generate ground movements and consequent category of damage, higher than those predicted within the GMA. However, as the manor house is not listed and it is owned by the applicant, an audit on the damage category predicted by the GMA on that building has not been undertaken.
- 4.12. The BIA recommends that a more detailed GMA is carried out at detailed stage of design. The BIA provides a strategy for monitoring structural movements to ensure construction is controlled and impacts are limited to those predicted. This should be reviewed once the Engineer and Contractor are appointed.
- 4.13. As mentioned in the previous audit report (GKemb12985-95-060320-Branch Hill House F1), the site is not located within a Local Flood Risk Zone. The flood risk assessment (FRA) identifies the site as being at very low risk of flooding. The roads around Branch Hill House did not flood in 1975 or 2002.
- 4.14. Also as mentioned in the previous audit report, the site is within a Critical Drainage Area (Group 3-010) and impermeable site area will increase, although this was not identified within the BIA scoping process. The BIA indicates that SUDS will be adopted to mitigate any impact to the hydrological environment and a drainage strategy is provided. Off-site drainage flow rates are

indicated to be attenuated to a maximum of 2l/s. Final proposed drainage design will require approval from LBC and Thames Water. The BIA concludes the proposed development will not impact the wider hydrological environment.

5.0 CONCLUSIONS

- 5.1. The qualifications of the authors for the land stability and hydrological assessments have been demonstrated to be in accordance with LBC guidance. The author of the hydrogeological assessment is not a chartered geologist. However, given the context of the proposals, the assessment is accepted.
- 5.2. Screening and scoping assessments are presented, supported by desk study information.
- 5.3. A site investigation indicates the ground conditions to comprise Made Ground underlain by the Bagshot Formation and Claygate Member. The groundwater was monitored considerably below the proposed basement depth.
- 5.4. Geotechnical parameters for the design of the substructure and temporary works information are provided, including sequencing, propping and structural calculations.
- 5.5. Although the method and calculation presented in the GMA are not completely clear, it is accepted that damages to the nearest neighbouring properties can be limited within Category 1 of the Burland Scale.
- 5.6. The structural monitoring strategy should be reviewed once the Engineer and Contractor are appointed.
- 5.7. The BIA concludes there will be no impact to the wider hydrogeological environment.
- 5.8. The site is identified as being at 'very low' risk of flooding.
- 5.9. The BIA indicates that SUDS will be adopted to mitigate any impact to the hydrological environment and a drainage strategy is provided. Final proposed drainage design will require approval from LBC and Thames Water.
- 5.10. The BIA meets the requirements of Camden Planning Guidance: Basements.

Appendix 1: Residents' Consultation Comments

Resident's Consultation Comments

Surname	Address	Date	Issue raised	Response
Caroline Reed	Lower level of Spedan Cose (formerly Branch Hill Estate)	31/12/2021	<ul style="list-style-type: none">• Surface water and flooding• Ground Investigation concerns• Ground Movement	<ul style="list-style-type: none">• See Section 4.13 to 4.15• See Section 4.7• See Section 4.10 – 4.11

Appendix 2: Audit Query Tracker

None

Appendix 3: Supplementary Supporting Documents

None

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