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Basement Impact Assessment Audit

58 Elsworthy Road
London
NW3 3BU

For
London Borough of Camden

Project No.
14291-09

Date
January 2024

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CONTENTS

APPENDICES

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 58 Elsworthy Road, London, NW3 3BU (planning reference 2024/5059/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 qualifications of the authors of the BIA are in accordance with LBC guidance.

1.5 The BIA has confirmed that the proposed basement will be founded within the London Clay.

1.6 It is likely that groundwater will be encountered during basement foundation excavation and construction. Its accepted that the proposed basement will not impact groundwater flow. However, groundwater control is likely to be required, and the impacts from this should also be discussed, assessed and mitigated as necessary.

1.7 The BIA should clarify whether any tree will be removed as part of the proposed basement construction. The BIA states no trees will be removed, which contradicts the Arboricultural survey.

1.8 The structural information required under 'Camden BIA: Scope of Engineering Services' should be provided.

1.9 The BIA should provide full output of its GMA analysis, so that it's assumptions and the calculations can be verified by the audit.

1.10 The BIA should confirm the basement depth at 56 Elsworthy Road and, where differential depth of foundations exist, confirm the assessment of building damage.

1.11 The flood risk assessment indicates a low risk of flooding to the proposed development. The proposed attenuation strategy mitigates against impacts to surface water flow.

1.12 As described in Section 5, it cannot be confirmed that the BIA complies with the requirements of CPG: Basements and the Principles for Audit set out in the Basement Impact Assessment (BIA) Audit Service Terms of Reference & Audit Process. Queries and comments on the BIA are described in Section 4 and Appendix 2.

2.0 INTRODUCTION

2.1 CampbellReith was instructed by London Borough of Camden (LBC) on 18/12/2024 to carry out a Category C audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 58 Elsworthy Road, London, NW3 3BU (Planning Reference: 2024/5059/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;

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 extensions at front first floor and roof levels including new side dormer; removal of and replacement ground floor rear extension; first floor and roof level extensions at rear including new rear dormer; reprovision of roof terrace at rear first floor level and new inset roof terrace at second floor level; excavation to provide new basement level and lightwell at rear; and minor alterations to fenestration throughout."

2.6 The Audit Instruction confirmed 58 Elsworthy Road, London, NW3 3BU is not listed, and not a neighbour to, listed buildings.

2.7 CampbellReith accessed LBC's Planning Portal on 02/01/2024 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA) by Geotechnical & Environmental Associated (GEA), Ref: J24161, Rev 3, dated 11 October 2024
- Design & Access Statement by Wolff Architects, Belsize Park, London

- Arboricultural Report by Connick Tree Consultants, Ref: 207242/JH, dated 04/06/2024
- Flood Risk Assessment and Drainage Strategy by Green Structural Engineering, Ref: 20240435, Rev 01, dated 16/10/2024
- Planning Application Drawings consisting of:
  - Location Plan by Wolff Architects, Ref: 2177, Drawing No: 001, Rev 0, dated 01/07/2024
  - Existing Ground Floor Plans by Wolff Architects, Ref: 2177, Drawing No: 010, Rev 0, dated 15/12/2023
  - Existing First Floor Plans by Wolff Architects, Ref: 2177, Drawing No: 011, Rev 0, dated 15/12/2023
  - Existing Second Floor Plans by Wolff Architects, Ref: 2177, Drawing No: 012, Rev 0, dated 15/12/2023
  - Existing Roof Plan by Wolff Architects, Ref: 2177, Drawing No: 013, Rev 0, dated 15/12/2023
  - Existing Front Elevation by Wolff Architects, Ref: 2177, Drawing No: 020, Rev 0, dated 15/12/2023
  - Existing Rear Elevation by Wolff Architects, Ref: 2177, Drawing No: 021, Rev 0, dated 15/12/2023
  - Existing South-West Elevation by Wolff Architects, Ref: 2177, Drawing No: 022, Rev 0, dated 15/12/2023
  - Existing North-East Elevation by Wolff Architects, Ref: 2177, Drawing No: 023, Rev 0, dated 15/12/2023
  - Existing Section AA by Wolff Architects, Ref: 2177, Drawing No: 030, Rev 0, dated 15/12/2023
  - Proposed Site Plan by Wolff Architects, Ref: 2177, Drawing No: 002, Rev A, dated 15/12/2023
  - Proposed Basement by Wolff Architects, Ref: 2177, Drawing No: 200, Rev B, dated 15/08/2024
  - Proposed Ground Floor by Wolff Architects, Ref: 2177, Drawing No: 201, Rev B, dated 15/08/2024
  - Proposed First Floor by Wolff Architects, Ref: 2177, Drawing No: 202, Rev A, dated 01/07/2024
  - Proposed Second Floor by Wolff Architects, Ref: 2177, Drawing No: 203, Rev A, dated 01/07/2024
  - Proposed Roof Plan by Wolff Architects, Ref: 2177, Drawing No: 203, Rev A, dated 01/07/2024

- Proposed Front Elevation by Wolff Architects, Ref: 2177, Drawing No: 300, Rev A, dated 01/07/2024
- Proposed Rear Elevation by Wolff Architects, Ref: 2177, Drawing No: 301, Rev A, dated 15/12/2023
- Proposed South-West Elevation by Wolff Architects, Ref: 2177, Drawing No: 302, Rev B, dated 15/08/2024
- Proposed North-East Elevation by Wolff Architects, Ref: 2177, Drawing No: 303, Rev A, dated 01/07/2024
- Proposed Section AA by Wolff Architects, Ref: 2177, Drawing No: 310, Rev A, dated 15/08/2024

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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	Further information is required e.g. construction programme, construction methods, information on piling/ underpinning etc
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	No	Information required on e.g. temporary propping during excavation, plan/drawings and depth of piling, information on underpinning and other structural engineering information should be provided.
Are suitable plan/maps included?	Yes	The relevant Arup GSD map extracts are referenced in screening assessment. See 3.1.1, 3.1.2 and 3.1.3
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	No	Plans/drawings related to structural engineering should be provided.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	Stability screening question 6 regarding tree removal is responded as "No". However, arboriculture report states that trees will be removed.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	See 3.1.1 Subterranean (groundwater) Screening Assessment
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Attenuation SuDs proposed
Is a conceptual model presented?	Yes	See 6.0 Ground Model

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	See 4.1 Potential Impacts
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	See 4.1 Potential Impacts
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Is factual ground investigation data provided?	Yes	See appendix a
Is monitoring data presented?	Yes	See 5.4 Groundwater
Is the ground investigation informed by a desk study?	Yes	See 1.3 Scope of Work
Has a site walkover been undertaken?	Yes	See 2.1 Site Description
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	See 3.1.2 screening question 13
Is a geotechnical interpretation presented?	Yes	See 7.1.1 Basement Retaining Walls
Does the geotechnical interpretation include information on retaining wall design?	Yes	See 7.1.1 Basement Retaining Walls
Are reports on other investigations required by screening and scoping presented?	Yes	The site is in Critical Drainage Area. BIA provided "Flood Risk Assessment and Drainage Strategy" report.
Are the baseline conditions described, based on the GSD?	No	Construction methodology, outline structural information, temporary propping drawing etc required.

Item	Yes/No/NA	Comment
Do the baseline conditions consider adjacent or nearby basements?	Yes	Neighbouring foundation depths should be confirmed or conservative values should be adopted for assessment purposes.
Is an Impact Assessment provided?	Yes	However, more information is required.
Are estimates of ground movement and structural impact presented?	Yes	However, the full output of the analysis is required.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	The impact assessment of tree removal and GMA clarifications to be presented.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	As above
Has the need for monitoring during construction been considered?	Yes	See 13.1 Site-Specific Risks
Have the residual (after mitigation) impacts been clearly identified?	No	Further information and clarification required.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Further information and clarification required.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	Further information and clarification required.

Item	Yes/No/NA	Comment
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	However, full output of the analysis needs to be audited.
Are non-technical summaries provided?	Yes	See 12.3 Non-Technical Summary of Evidence

4.0 DISCUSSION

4.1 The Basement Impact Assessment (BIA) has been carried out by engineering consultants Geotechnical & Environmental Associates (GEA) and the individuals concerned in its production have suitable qualifications.

4.2 The LBC Instruction to proceed with the audit identified that the basement proposal is not listed and not a neighbour to listed buildings. The Design & Access Statement identified that 58 Elsworthy Road is located in the Elsworthy Conservation Area and constructed as part of Willet development in around 1899.

4.3 The proposed basement consists of a single storey construction formed by excavating c4.00m bgl under the entire existing footprint of the property with lightwells into the existing rear garden space. The proposal includes alterations to the front elevation comprising a first-floor extension and dormer and alterations to the rear elevation including extending the existing terrace.

4.4 The structural information required under 'Camden BIA: Scope of Engineering Services' should be provided. This should include construction methodology, outline permanent and temporary structural information (sequencing and propping) and confirm foundation depths and the depth of proposed contiguous bored piles wall at the rear of the property. This information is required to inform the BIA process.

4.5 The BIA has provided site specific ground investigation (GI) report comprising five boreholes and five foundation inspection pits. It is reported that the depth of Made Ground is from 2.00m bgl to 2.50m bgl which is underlain by Head Deposits of 1.50m to 2.00m above London Clay. Groundwater strikes are also recorded in borehole 1 and 2, at depths of 4.50m bgl and 2.50m bgl respectively.

4.6 The groundwater monitoring data recorded from three standpipes show depth to groundwater ranged from 0.26m bgl to 3.70m bgl over the monitoring period

4.7 The BIA has confirmed that the proposed basement should be founded within the firm becoming stiff London Clay Formations and its foundations will need to be extended beyond the depth of desiccation or the depth of roots within London Clay.

4.8 The BIA indicates in the land stability screening Q.6 that no trees will be removed. However, Table 3 of the Arboriculture Report indicates the removal of trees H3 and T7. The BIA should clarify what trees will be removed, assess impacts to neighbouring structures and propose appropriate mitigation measures, as required.

4.9 A scoping assessment is undertaken and presented in section 4.0. The BIA forwarded seven screening questions for scoping. Impact assessments of the scoping items are discussed in Part 4, section 12.0.

4.10 The BIA states in scoping that London Clay is the shallowest stratum at the site and accepts that it is prone to seasonal shrink/swell. The impact assessment states that shrinkable soil is affected by trees and desiccation was observed to be around 1.50m bgl.

4.11 Scoping for groundwater screening Q.1b querying whether the proposed basement extends beyond the water table surface is responded in the BIA as "May be, however, minor seepages may be encountered". However, in paragraph 4 of section 5.4 Groundwater, the three attempts made to measure groundwater recharge rate in borehole 1 are described as "the water level rapidly returned to the resting level before any measurements could be taken". In the impact assessment, the BIA states that the recharge is shown to be relatively rapid and concludes that it is perched groundwater and unlikely to be flowing or be in significant hydraulic connectivity. It is accepted that the London Clay will not support significant groundwater flows and that the proposed basement will not impact groundwater flow. However, given the proposed construction methodology, which includes underpinning techniques, groundwater control is likely to be required. The proposed control methods should be described, including assessment and mitigation of any potential impacts that could result.

4.12 In scoping, for the groundwater screening Q.4, change in the proportion of hardstanding area, the BIA accepts that the proposed basement will marginally increase the hardstanding area. However, in the impact assessment, the BIA states that the basement is expected to extend into rear garden by a minimal amount and it is unlikely to significantly impact the surface water infiltration.

4.13 For scoping Q.8 of the land stability screening, the BIA confirms that a tributary of the River Tyburn, one of London's lost rivers, historically flowed approximately 80m to the south of the site. In the impact assessment, the BIA asserts that since the river has been culverted to form a drain, it is unlikely to be in hydraulic continuity with the perch water within the Head Deposits and since no (evidence of) soils resulting from the former river were encountered on site, the proposed basement would not therefore impact on the surrounding water environment.

4.14 It is understood that the River Tyburn has been incorporated into the sewer network known as the King's Scholar Main Sewer and Figure 11 of the London Borough of Camden Level 1 Strategic Flood Risk Assessment (January 2024) shows the culverted water course is very close to the site. Consultation with Thames Water will be required in advance of construction and appropriate asset protection agreements should be adopted.

4.15 In scoping for Q.13 of the land stability screening, the BIA states that the proposed basement will increase the differential depth of foundations relative to neighbouring properties. In the impact assessment, the BIA states that 56 Elsworthy Road has had a basement constructed (planning permission ref: 2013/5073/P). As such, its stated, that the proposed basement is only likely to increase differential foundation depth relative to 60 Elsworthy Road and the BIA has proposed propping during construction. Details of the existing basement at 56 Elsworthy Road should be confirmed and any differential depth of foundations stated.

4.16 The BIA states in Q.4 of the surface water flow and flooding screening that attenuation SUDS will be adopted to control additional surface water received due to increase in the hardstanding area. The Flood Risk Assessment (FRA) and Drainage Strategy by Green Structural Engineering proposes a 54m^2 x 0.8m deep underground attenuation tank to be located at the front of the property.

4.17 The FRA indicates a low risk of flooding to the proposed development. The proposed attenuation strategy mitigates against impacts to surface water flow.

4.18 The BIA has referenced structural drawings (e.g., SK-0435-01, dated 29.07.2024, MS03 and MS04, Rev P1 dated August 2024) but they are not submitted with the BIA and should be provided for review. The BIA should provide construction methodology, outline permanent and temporary structural information (sequencing and propping) and confirm foundation depths and the depth of proposed contiguous bored pile wall at the rear of the property required under "Camden BIA: Scope of Engineering Services".

4.19 The ground movement assessment (GMA) is presented in section 9.0 of the BIA. It states that it has used PDisp and XDisp software to predict ground movements. The results of the combined movements of installation and excavation from XDisp is indicated to be 5 to 7mm for vertical settlement and 6 to 8mm for horizontal movement. The results from the PDisp analysis indicates that by the time the construction is completed, between 8 and 12mm of heave is likely to have taken place at the centre of excavation and 6mm of heave beneath the underpinning. The BIA states that the full output of all the analyses can be provided on requests. Under LBC's CPG: Basement's policy, this information should be submitted with the BIA and should be consistent with the structural engineering information to be provided (e.g. levels, loads, length of piles etc).

4.20 The damage assessment is presented in section 10.0. The BIA only presents the damage assessment for the walls of 60 Elsworthy Road. The damage category is predicted from below limit of detection to Very Slight (1), but the BIA has not assessed the structural damage to 56 Elsworthy Road on the basis it has a basement and no differential depth of foundations. As 4.15, this should be confirmed and assessment presented, as required.

4.21 Noting that underpinning may be required through saturated Made Ground and Head Deposits, groundwater control is likely to be required, and the impacts from this should also be discussed, assessed and mitigated as necessary.

4.22 The BIA has suggested the structural monitoring of adjacent properties in section 10.2. It is stated that precise monitoring strategy will be developed at a later stage.

5.0 CONCLUSIONS

5.1 The qualifications of the authors of the BIA are in accordance with LBC guidance.

5.2 The BIA has confirmed that the proposed basement will be founded within the London Clay.

5.3 It is likely that the ground water will be encountered during basement foundation excavation and construction. It is accepted that the proposed basement will not impact groundwater flow. However, groundwater control is likely to be required, and the impacts from this should also be discussed, assessed and mitigated as necessary.

5.4 The BIA should clarify whether any tree will be removed as part of the proposed basement construction and assess impacts to neighbouring structures.

5.5 The structural information required under 'Camden BIA: Scope of Engineering Services' should be provided.

5.6 The BIA should provide full output of its GMA analysis, so that it's assumptions and the calculations can be verified by the audit. These should be consistent with the structural information to be submitted.

5.7 The BIA should confirm the basement depth at 56 Elsworthy Road and, where differential depth of foundations exist, confirm the assessment of building damage.

5.8 Consultation with Thames Water will be required in advance of construction and appropriate asset protection agreements should be adopted.

5.9 The flood risk assessment indicates a low risk of flooding to the proposed development. The proposed attenuation strategy mitigates against impacts to surface water flow.

5.10 It cannot be confirmed that the BIA complies with the requirements of CPG: Basements and the Principles for Audit set out in the Basement Impact Assessment (BIA) Audit Service Terms of Reference & Audit Process, specifically:

- The Basement Impact Assessment has not been prepared in accordance with the processes and procedures set out in CPG: Basements.
- The methodologies and assumptions are not clearly stated and/or are not appropriate to the scale of the proposals and the nature of the site.
- The conclusions have not been arrived at based on all necessary and reasonable evidence and considerations, in a reliable, transparent manner, by suitably qualified professionals, with sufficient attention paid to risk assessment and use of cautious or moderately conservative engineering values/estimates.
- The conclusions of the various documents/details comprising the BIA are not consistent with each other. The conclusions are not sufficiently robust and accurate and are not accompanied by sufficiently detailed amelioration/mitigation measures to support the grant of planning permission in accordance with Policy A5 of the Local Plan, in respect of:
    - maintaining the structural stability of the building, the ground and any neighbouring properties to within limits set out in the policy/guidance

- avoiding adversely affecting drainage and run-off or causing other damage to the water environment and
- avoiding cumulative impacts on ground and structural stability or the water environment in the local area.

5.11 Queries and comments on the BIA are described in Section 4 and Appendix 2.

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Appendix 1

Consultation Responses

None

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Appendix 2

Audit Query Tracker

D1

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Audit Query Tracker

query No	Subject	Query	Status	Date closed out
1	BIA	▪ Construction methodology and structural information to be provided according to the requirement of 'Camden BIA: Scope of Engineering Services'.	Open – see 4.4 and 4.18	
2	Groundwater / Land Stability	▪ Groundwater control is likely to be required, and the impacts from this should also be discussed, assessed and mitigated as necessary.	Open - 4.11 and 4.15	
3	Land Stability	▪ Confirm if any tree will be removed as part of basement proposal and assess impact to neighbouring structures. ▪ Provide full output of GMA. ▪ Provide full output of assessment of damage category on both adjacent properties.	Open – 4.8, 4.19 and 4.20	
4	Land Stability	▪ The King's Scholar Main Sewer is mapped very close to the site. Consultation with Thames Water will be required in advance of construction and appropriate asset protection agreements should be adopted.	Open – 4.14	Note Only

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Appendix 3

Supplementary Supporting documents

None

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