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# 70 Lady Margaret Road, London, NW5 2NP

## Basement Impact Assessment Audit

For
London Borough of Camden

Project No.
14006-25

Date
October 2023

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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 70 Lady Margaret Road, London, NW5 2NP (planning reference 2023/2415/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 proposed development comprises the demolition of the existing three-storey rear extension, construction of a new three-storey rear extension with a single-storey basement.

1.5 The individuals concerned in the production of the GEA Basement Impact (BIA) have suitable qualifications in accordance with LBC guidance. The qualifications of the Symmetrys BIA authors have been provided in the revised submission.

1.6 Screening and Scoping assessments are presented, supported by desk study information.

1.7 The site is at low risk from flooding. The proposed development will result in an increase in hardstanding areas, however, a SuDS Strategy has been presented as mitigation. The proposed drainage strategy is subject to approval by LBC and Thames Water.

1.8 A ground investigation was undertaken and indicates the basement will be founded in London Clay Formation. Groundwater was not encountered during the ground investigation.

1.9 The London Clay is identified as an unproductive aquifer.

1.10 The geotechnical parameters have been amended in the revised submission and are accepted.

1.11 A Ground Movement Assessment (GMA) has been undertaken with predicted impacts to neighbouring structures. The damage assessment indicates neighbouring properties will not exceed Category 0 (Negligible) of the Burland scale.

1.12 The BIA indicated that a movement monitoring scheme will be adopted as part of party wall negotiations to ensure movements are within the predicted range of the GMA.

1.13 Trees are proposed to be removed, with no expected impact on neighbouring structures.

1.14 It is accepted that the proposed basement will not have a significant impact on the hydrology, hydrogeology or land stability of the area.

1.15 It can be confirmed that the BIA complies with the requirements of Camden Planning Guidance: Basements.

## 2.0 INTRODUCTION

2.1 CampbellReith was instructed by London Borough of Camden (LBC) on 04 August 2023 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 70 Lady Margaret Road, London, NW5 2NP and Planning Reference 2023/2415/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.
- Neighbourhood Plan: Kentish Town

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 "*Excavation of new basement level; demolition of existing rear extensions and erection of replacement three storey rear extensions; fenestration alterations; reinstatement of original eaves line; installation of front and rear rooflights; front and rear landscaping alterations; and associated external works including installation of refuse and cycle storage.*"

2.6 The Audit Instruction confirmed 70 Lady Margaret Road did not involve, nor was a neighbour to, listed buildings.

2.7 CampbellReith accessed LBC's Planning Portal on 19 August 2023 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment (BIA) by Symmetrys Structural/Civil Engineers, Ref. 22276-SYM-XX-XX-RPT-S-0001, dated 31 May 2023.

- Desk Study, Ground Investigation & Basement Impact Assessment report by GEA Geotechnical & Environmental Associates Limited, Ref. J23059, dated 24 May 2023.
- BS5837 Arboricultural Report & Impact Assessment by Crown Tree Consultancy, Ref. 011413, dated 27 February 2023.
- Existing and Proposed Architectural drawings by Novak Hiles Architects, dated March 2023.

2.8 The following additional information was provided in response to queries raised in the D1 issue of CampbellReith's audit:

- Basement Impact Assessment (BIA) by Symmetrys Structural/Civil Engineers, Ref. 22276-SYM-XX-XX-RPT-S-0001 Rev F, dated 13 October 2023.
- Desk Study, Ground Investigation & Basement Impact Assessment report by GEA Geotechnical & Environmental Associates Limited, Ref. J23059 Rev 2, dated 6 October 2023.

## 3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

| Item | Yes/No/NA | Comment |
|---|---|---|
| Are BIA Author(s) credentials satisfactory? | Yes | The author qualifications for the Symmetrys BIA have been provided in the revised submission.<br>The author qualifications are provided for the GEA BIA and are accepted. |
| Is data required by Cl.233 of the GSD presented? | Yes | Utility data is not provided; GEA BIA states the basement is 14m from the nearest service, with no impact expected on road services; no information provided about the presence of services under the property. |
| 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 | Arup maps are used for reference. |
| Land Stability Screening:<br>Have appropriate data sources been consulted?<br>Is justification provided for 'No' answers? | Yes | Section 8.2 of the Symmetrys BIA and Section 3.1.2 of the GEA BIA. |
| Hydrogeology Screening:<br>Have appropriate data sources been consulted?<br>Is justification provided for 'No' answers? | Yes | Section 8.1 of the Symmetrys BIA and Section 3.1.2 of the GEA BIA. |
| Hydrology Screening:<br>Have appropriate data sources been consulted?<br>Is justification provided for 'No' answers | Yes | Section 8.3 of the Symmetrys BIA and Section 3.1.3 of the GEA BIA. The response to Q4 should be 'yes' however this is considered in the scoping. |

| Item | Yes/No/NA | Comment |
|---|---|---|
| Is a conceptual model presented? | Yes | Section 7.0 of the GEA BIA. |
| Land Stability Scoping Provided?<br>Is scoping consistent with screening outcome? | Yes | Section 9.0 of the Symmetrys BIA and Section 4.0 of the GEA BIA. |
| Hydrogeology Scoping Provided?<br>Is scoping consistent with screening outcome? | Yes | Section 9.0 of the Symmetrys BIA and Section 4.0 of the GEA BIA. |
| Hydrology Scoping Provided?<br>Is scoping consistent with screening outcome? | Yes | Section 9.0 of the Symmetrys BIA and Section 4.0 of the GEA BIA. |
| Is factual ground investigation data provided? | Yes | Appendix A of the Desk Study, Ground Investigation and Basement Impact Assessment Report. |
| Is monitoring data presented? | Yes | Section 4.2.4 of the Symmetrys BIA and Section 5.3 of the GEA BIA. |
| Is the ground investigation informed by a desk study? | Yes | Section 2.0 of the GEA BIA. |
| Has a site walkover been undertaken? | Yes | |
| Is the presence/absence of adjacent or nearby basements confirmed. | Yes | Section 7.0 of the Symmetrys BIA. |
| Is a geotechnical interpretation presented? | Yes | Section 8.0 of the GEA BIA. |
| Does the geotechnical interpretation include information on retaining wall design? | Yes | Section 8.0 of the GEA BIA. |

| Item | Yes/No/NA | Comment |
|---|---|---|
| Are reports on other investigations required by screening and scoping presented? | Yes | Arboricultural Assessment, Structural Calculations, SuDs Layout, Surface Water Calculations. |
| Are the 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 | Section 14 of the GEA BIA. No Impact Assessment is provided in the Symmetrys BIA. |
| Are estimates of ground movement and structural impact presented? | Yes | Sections 11.0 & 12.0 of the GEA BIA. |
| Is the Impact Assessment appropriate to the matters identified by screening and scoping? | Yes | |
| Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme? | Yes | |
| Has the need for monitoring during construction been considered? | Yes | Section 12.2 of the GEA BIA. |
| 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 | |

| Item | Yes/No/NA | Comment |
|---|---|---|
| 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? | Yes | |
| Does report state that damage to surrounding buildings will be no worse than Burland Category 1? | Yes | Section 12 of the GEA BIA. |
| Are non-technical summaries provided? | Yes | Section 15 of the GEA BIA. |

## 4.0 DISCUSSION

4.1 A Basement Impact Assessment (BIA) has been carried out by Symmetrys Structural/Civil Engineers, the qualifications of the authors are provided in the revised submission. The Symmetrys BIA is informed and supported by Geotechnical & Environmental Associates (GEA) who produced a Desk Study, Ground Investigation & Basement Impact Assessment report. The individuals concerned in the production of the GEA document have suitable qualifications.

4.2 The site is bound by Lady Margaret Road at the front of the property in the northwest. 68C Lady Margaret Road adjoins the property on the southwest side and 70A Lady Margaret Road is located in close proximity to the northeast. The site is currently occupied by a four-storey building with a small single storey cellar towards the front of the building. The building has a three-storey rear extension that was added to the original building. Whilst there is an existing cellar beneath the front section of the main building, no basement is present beneath the three-storey rear extension.

4.3 The proposed development comprises the demolition of the existing rear extension and the construction of a new three-storey rear extension with a single-storey basement underneath part of the proposed extension. The proposed basement will be formed using underpinning techniques and cast in-situ reinforced concrete retaining walls in a 'hit and miss' sequence and will extend to c. 3m below ground level (bgl). Temporary props will support the basement during construction, while in the permanent case, a reinforced concrete ground floor slab will provide support to the basement wall.

4.4 Screening and scoping assessments are presented in both the Symmetrys and GEA BIA reports, informed by desktop study information. Most relevant figures/maps and other guidance documents are referenced within the BIA to support responses to screening questions.

4.5 The Symmetrys BIA does not include any impact assessment following the scoping stage. The impact assessments are provided in the GEA BIA along with ground movement and damage category assessment.

4.6 The BIA identifies an increase in hardstanding but a decrease of impermeable surfaces at the site. This is achieved through the use of Sustainable Drainage Systems (SuDs) permeable surfacing and a green roof. A SuDs layout plan and calculations are provided in Appendix D of the Symmetrys BIA and are subject to Thames Water and LBC's approval.

4.7 The BIA states that the site has a very low flooding risk from sewers, reservoirs, and other artificial sources, groundwater and fluvial/tidal watercourses.

4.8 It can be confirmed that the proposals will not have a significant impact on the hydrology of the area.

4.9 A ground investigation was undertaken by GEA. Site works comprised a single borehole to 9.5m depth, and three hand excavated trial pits to a maximum depth of 1.45m. The investigation encountered a moderate thickness of Made Ground to a maximum depth of 0.80m, overlying London Clay to depth. The GEA BIA notes that the geological map for the area shows the site to be in an area marked as previously worked ground, however deep Made Ground was not identified in the ground investigation.

4.10 Groundwater was not encountered in the borehole during the ground investigation. Section 5.3 of the GEA BIA indicates groundwater seepages were present at the base of trial pit No. 2 and at a depth of 0.50m in trial pit No. 3. The GEA report suggests that the seepages might result from water accumulating against the building's foundations and recommendations for accommodating this ingress using sump pumping is identified.

4.11 A groundwater standpipe was installed in the borehole to 5m depth. The revised BIA has confirmed that one monitoring visit was carried out and the standpipe was found to be dry.

4.12 An allowable bearing capacity of 150kPa is identified for the basement bearing stratum at 3m depth.

4.13 Structural retaining wall calculations are provided in Appendix B of the Symmetrys BIA. In the revised submission, the discrepancies concerning geotechnical parameters have been rectified to ensure consistency between the structural retaining wall calculations and the parameters detailed in Section 8.1.1 of the GEA BIA.

4.14 The Symmetrys BIA outlines a suggested construction sequence for the basement, provided in Appendix A. First partial demolition of ground floor existing extension will take place, with plans to retain and underpin the party wall and part of the main house structure adjacent to the proposed basement. The basement retaining wall directly adjacent to the party wall will be formed in a 'hit and miss' sequence, with the rest of the basement formed in open cut, with the underpins supporting the party wall and existing building. The construction sequence confirms temporary propping in the short term, once the ground floor slab has been constructed and has sufficiently cured the temporary propping to the liner walls will be removed.

4.15 The construction sequence in the revised BIA confirms the use of a ground bearing floor slab with heave protection.

4.16 A Ground Movement Assessment (GMA) and a damage assessment are provided in the GEA BIA to demonstrate that ground movements and consequential damage to neighbouring properties will comply with LBC's policy requirements. Nearby sensitive structures comprise No 68 and 70A Lady Margaret Road. The GEA BIA states that a contiguous piled wall was installed along the boundary between 70 and 70A Lady Margaret Road to facilitate the construction of No 70A, as it is located at 3.50m below the ground level of No 70. The proposed basement will extend to a depth of 3m bgl. As the proposed basement will be above the foundation level of 70A Lady Margaret Road, it will not be affected, and it has been excluded from the GMA.

4.17 Section 11.2.1 of the GEA BIA report states that a 32kPa load will be applied at basement level due to the proposed development. Appendix B of the Symmetrys BIA provides the anticipated loadings for the proposed development.

4.18 The GMA and damage assessments analyses were carried out using the Oasys programmes PDisp and XDisp. PDisp was used to model vertical movements due to basement excavation (unloading) and XDisp was used to estimate movements due to underpinning and an associated damage category.

4.19 In Section 11.1.1 the GEA BIA recognises that X-Disp uses soil movement relationships that have been derived for embedded retaining walls and that there is limited published data for ground movements due to underpinning. The analysis therefore uses bespoke curves that produce a minimum of 5mm vertical and horizontal movement for a 3m retained height.

4.20 The results of the Building Damage Assessment indicate that the damage to neighbouring properties will not exceed Burland Category 0 (Negligible)

4.21 The BIA indicates that a monitoring strategy will be developed at a later stage and will be subject to discussions and party wall agreements with the owners of the adjacent properties and structures. Contingency measures will be implemented if movements of the adjacent structures exceed the predefined trigger levels.

4.22 The Arboricultural Impact Assessment indicates that trees are going to be removed. The BIA states that the trees will be removed regardless of the proposed work due to previous subsidence issues, replacement planting is proposed a distance from the proposed extension. The foundation of the proposed development according to NHBC standards should be at minimum at 2.5m bgl, and the proposed foundations are under 3m bgl. Hence, no damage to neighbouring properties is expected from tree felling.

4.23 Utility data is not provided; however, according to the GEA BIA, the proposed basement is positioned 14m away from the nearest service and is not expected to impact existing services in the road. No information is provided about the presence of services under the property.

## 5.0 CONCLUSIONS

5.1 The individuals concerned in the production of the GEA Basement Impact (BIA) have suitable qualifications in accordance with LBC guidance. The qualifications of the Symmetrys BIA authors have been provided in the revised submission.

5.2 Screening and Scoping assessments are presented, supported by desk study information.

5.3 The site is at low risk from flooding, and the proposed development will result in an increase in hardstanding areas. However, a SuDS Strategy has been presented as mitigation. It is accepted that the development will not impact the hydrology of the area. The proposed drainage strategy is subject to approval by LBC and Thames Water.

5.4 A ground investigation was undertaken and indicates the basement will be founded in London Clay Formation. Groundwater was not encountered during the ground investigation.

5.5 The London Clay is identified as an unproductive aquifer.

5.6 The geotechnical parameters have been amended in the revised submission and are accepted.

5.7 A Ground Movement Assessment (GMA) has been undertaken with predicted impacts to neighbouring structures. The damage assessment indicates neighbouring properties will not exceed Category 0 (Negligible) of the Burland scale.

5.8 The BIA indicated that a movement monitoring scheme will be adopted as part of party wall negotiations to ensure movements are within the predicted range of the GMA.

5.9 Trees are proposed to be removed, with no expected impact on neighbouring structures.

5.10 It is accepted that the proposed basement will not have a significant impact on the hydrology, hydrogeology or land stability of the area.

5.11 It can be confirmed that the BIA complies with the requirements of Camden Planning Guidance: Basements.

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# Appendix 1

## Consultation Responses

None

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# Appendix 2

# Audit Query Tracker

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Audit Query Tracker

| Query No | Subject | Query | Status | Date closed out |
|---|---|---|---|---|
| 1 | Hydrogeology | Please confirm the number of standpipe monitoring visits undertaken and consider the results in the hydrogeology impact assessment. | Closed | 17/10/2023 |
| 2 | Land Stability | Clarification of how the geotechnical parameters have been derived. | Closed | 17/10/2023 |
| 3 | Land Stability | The geotechnical parameters presented in the GEA BIA should be adopted in the structural calculations. | Closed | 17/10/2023 |
| 4 | Land Stability | Clarification of the damage categories is required. | Closed | 17/10/2023 |
| 5 | Land Stability | Further assessment of the impact of removing trees on neighbouring structures is required. | Closed | 17/10/2023 |
| 6 | BIA Format | Utility data not provided and requested. | Closed | 17/10/2023 |

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# Appendix 3

# Supplementary Supporting Documents

None

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