

71 Goldhurst Terrace,  
NW6 3HA

Basement Impact Assessment  
Audit

For  
London Borough of Camden

Project Number: 12727-90  
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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 71 Goldhurst Terrace, NW6 3HA (planning reference 2018/1610/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 qualifications of the authors of the BIA and the associated reports are in compliance with the requirements of CPG Basements.
- 1.5. The BIA Audit Instruction confirmed that the site is situated within the South Hampstead Conservation Area and that there are no listed building neighbouring the site.
- 1.6. The proposed works include the excavation of a new single story basement to a depth of approximately 3.8m to the full footprint of the existing building, extending to the front of the property to form a new lightwell.
- 1.7. The ground conditions are indicated to be 0.7m of Made Ground overlying the London Clay, designated unproductive strata. Groundwater was not encountered during the ground investigation. The BIA recommends that the contractor make an allowance for temporary dewatering of any perched water encountered.
- 1.8. The proposed work involves removing a number of trees. The screening and scoping identify that an arboricultural report should be provided. This should be provided and reviewed by LBC's Tree and Landscape Officer to confirm if the proposed basement impacts the tree root protection zone.
- 1.9. The structural report notes that the basement walls are designed as cantilevers. It's noted that the calculations provided include for a prop to the top of the wall. The structural proposals should be confirmed.
- 1.10. A ground movement assessment (GMA) has been undertaken. The GMA indicates the potential damage to neighbouring properties as no higher than Category 1 (Very Slight) on the Burland Scale. The GMA is considered to be reasonably conservative and assumes low stiffness (cantilever) retaining walls.

- 1.11. The BIA suggest transitional underpins may be required. However, the structural proposals do not consider transitional underpins. This should be clarified and transitional underpins adopted within the structural proposals, if required.
- 1.12. Proposals are provided for a structural movement monitoring strategy during excavation and construction, including reasonable trigger values. However, the upstairs flats to 71 Goldhurst Terrace should also be included in the monitoring proposals.
- 1.13. The site is within the Goldhurst Local Flood Risk Zone. The Flood Risk Assessment (FRA) report indicates the site to be at a very low risk of flooding.
- 1.14. It is accepted that the increase to the hardstanding is negligible and that there will be no impacts to the wider hydrological environment.
- 1.15. It is accepted that there are no slope stability concerns regarding the proposed development and it is not in an area prone to flooding.
- 1.16. An outline construction programme should be provided.
- 1.17. Queries and requests for further information are discussed in Section 4 and summarised in Appendix 2. Until the additional information is provided, the BIA does not meet the criteria of CPG Basements.

## 2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 03 July 2018 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 71 Goldhurst Terrace, NW6 3HA.
- 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;
  - d) 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 a basement and creation of lightwell to the front of the property, erection of a single storey infill extension and single storey rear extension and the repositioning of the railings to the front of the property."*

The Audit Instruction also confirms that the proposals for 71 Goldhurst Terrace does not involve any listed buildings, nor is neighbour to a listed building.

2.6. CampbellReith accessed LBC's Planning Portal on 15 July 2018 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Engineering Method Statement dated March 2018 by Green Structural Engineering
- Basement Impact Assessment dated March 2018 by GabrielGeo Consulting (Parts 1-29)
- Floor Risk Assessment (FRA) by Opera Architects dated May 2018
- Planning Application Drawings by Opera Architects dated April 2018 consisting of:
  - Site Location Plan
  - Proposed Plans, Sections and Elevations
- Design & Access Statement
- 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        | Programme of works not included  |
| Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology? | No        | Structural proposals to be confirmed e.g. props to retaining walls, transitional underpins, existing underpins / foundations etc |
| 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:<br>Have appropriate data sources been consulted?<br>Is justification provided for 'No' answers?  | Yes       |  |
| Hydrogeology Screening:<br>Have appropriate data sources been consulted?<br>Is justification provided for 'No' answers?  | Yes       |  |
| Hydrology Screening:<br>Have appropriate data sources been consulted?<br>Is justification provided for 'No' answers?   | Yes       |  |
| Is a conceptual model presented?   | Yes       |  |
| Land Stability Scoping Provided?<br>Is scoping consistent with screening outcome?  | Yes       |  |



| Item   | Yes/No/NA | Comment   |
|--|-----------|---|
| Hydrogeology Scoping Provided?<br>Is scoping consistent with screening outcome?    | Yes       |   |
| Hydrology Scoping Provided?<br>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       |   |
| Is a geotechnical interpretation presented?  | Yes       |   |
| Does the geotechnical interpretation include information on retaining wall design? | Yes       |   |
| Are reports on other investigations required by screening and scoping presented?   | No        | Arboricultural report has been recommended but is not provided. |
| 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       |   |

| Item   | Yes/No/NA | Comment  |
|--|-----------|--|
| Are estimates of ground movement and structural impact presented?  | Yes       |  |
| Is the Impact Assessment appropriate to the matters identified by screen and scoping?  | Yes       |  |
| Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?                               | Unknown   | BIA references transitional underpins although not confirmed in structural proposal. |
| Has the need for monitoring during construction been considered?   | Yes       | Monitoring of upper flat to be included.   |
| 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       | Subject to confirmation of structural proposals.                                     |
| 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       |  |
| Are non-technical summaries provided?  | Yes       |  |

## 4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out by Gabriel GeoConsulting, with the Structural Engineer's Method Statement carried out by Green Structural Engineering. The Flood Risk Assessment has been carried out by Opera Architects. The qualifications of the authors of the BIA and the associated reports are in compliance with the requirements of CPG Basements.
- 4.2. The BIA includes screening, scoping, site investigations and impact assessment stages as defined and required in the LBC Planning Guidance document 'CPG Basements' dated March 2018.
- 4.3. The existing building is of traditional masonry and timber construction. It has three storeys above ground with an existing lower ground floor cellar beneath part of the building. It forms part of a terrace of four houses constructed circa 1870. The house has previously been divided into flats. The site is situated mid terrace, to the east side of Goldhurst Terrace sharing party walls with No 69 to the North and No 73 to the south of the property.
- 4.4. The BIA Audit Instruction confirmed that the site is situated within the South Hampstead Conservation Area and that there are no listed buildings neighbouring the site.
- 4.5. The proposed works include the excavation of a new single story basement across the full footprint of the existing building, extending into the hard standing area to the front of the property to form a new lightwell. The depth of the proposed basement is approximately 3.8m below the existing ground floor level. It is proposed to construct the new basement by forming reinforced concrete underpins in a hit and miss sequence beneath the existing property. A new retaining wall is proposed to be constructed to form the new lightwell structure. The basement slab is to be ground bearing.
- 4.6. The BIA indicates the existing footings as stepped, shallow strip footings bearing on the London Clay. However, the trial pit investigation indicates concrete footings to a depth of up to 680mm beneath the brick corbel. It should be confirmed if the property has previously been underpinned. These existing concrete footings have not been considered as part of the structural proposals and this should be rectified.
- 4.7. A limited site investigation has been undertaken, which is not fully in accordance with LBC guidance (Guidance for Subterranean Development (GSD) Appendix G2). From a single borehole drilled on site the ground conditions are indicated to be 0.7m of Made Ground overlying the London Clay, designated unproductive strata. Groundwater was not encountered during the ground investigation. One round of subsequent monitoring in March 2018 recorded groundwater at 3.7m bgl. It is accepted that there will be no impacts to the wider

hydrogeological environment and the basement will not extend below the water table. The interpreted geotechnical parameters are suitably conservative. The BIA recommends that the contractor make an allowance for temporary dewatering of any perched water encountered. The indicative retaining wall design has considered the ground water rising to the top of the wall in line with best practice.

- 4.8. The proposed work involves removing a number of trees. The screening and scoping identify that an arboricultural report should be provided. This should be provided and reviewed by LBC's Tree and Landscape Officer to confirm if the proposed basement impacts the tree root protection zone.
- 4.9. The BIA notes the high volume change potential of the London Clay. The proposed foundation depths are beyond the zone likely to be affected by shrink / swell movements. The structural proposals note that Cordex will be used to mitigate against clay heave.
- 4.10. The structural report notes that the basement walls are designed as cantilevers. It's noted that the calculations provided include for a prop to the top of the wall. The structural proposals should be confirmed.
- 4.11. A ground movement assessment (GMA) has been undertaken. The GMA indicates the potential damage to neighbouring properties as no higher than Category 1 (Very Slight) on the Burland Scale. The GMA is considered to be reasonably conservative and assumes low stiffness (cantilever) retaining walls. Reference has been made to settlement curves in section 10.6.8., used to derive maximum deflections, and these should be provided for reference.
- 4.12. The BIA suggest transitional underpins may be required. However, the structural proposals do not consider transitional underpins. This should be clarified and transitional underpins adopted within the structural proposals, if required.
- 4.13. Proposals are provided for a structural movement monitoring strategy during excavation and construction, including reasonable trigger values. However, the upstairs flats to 71 Goldhurst Terrace should also be included in the monitoring proposals.
- 4.14. It is noted that the proposed basement is situated within Flood Zone 1 (negligible risk of flooding) and Goldhurst Terrace is listed in the 'Floods in Camden' report as having flooded in both 1975 and 2002. The site is within the Goldhurst Local Flood Risk Zone. The Flood Risk Assessment (FRA) report indicates the site to be at a very low risk of flooding. Nevertheless, mitigation actions recommended within the BIA should be adopted, including raised threshold levels and upstands to lightwells.
- 4.15. An outline construction programme should be provided, in accordance with the GSD paragraph 233.

- 4.16. It is accepted that the increase to the hardstanding is Negligible and that there will be no impact to the wider hydrological environment.
- 4.17. It is accepted that there are no slope stability concerns.

## **5.0 CONCLUSIONS**

- 5.1. The qualifications of the authors of the BIA and the associated reports are in compliance with the requirements of CPG Basements.
- 5.2. The proposed works include the excavation of a new single story basement to the full footprint of the existing building, extending to the front of the property to form a new lightwell.
- 5.3. A limited site investigation has Made Ground overlying the London Clay. Groundwater was not encountered during the ground investigation.
- 5.4. The BIA recommends that an aboricultural report should be provided. This should be reviewed by LBC's Tree and Landscape Officer to confirm if the proposed basement impacts tree root protection zones.
- 5.5. The structural proposals and BIA should be consistently presented in regards to structural design proposals, as discussed in Section 4.
- 5.6. A ground movement assessment (GMA) has been undertaken. The GMA indicates the potential damage to neighbouring properties as no higher than Category 1 (Very Slight) on the Burland Scale. This is accepted, pending provision of settlement curves and confirmation of structural proposals.
- 5.7. A movement monitoring strategy has been provided. The upstairs flats to 71 Goldhurst Terrace should also be included in the monitoring proposals.
- 5.8. It is accepted that the risk of flooding is negligible. Nevertheless, mitigation actions recommended within the BIA should be adopted.
- 5.9. It is accepted that the increase to the hardstanding is negligible and that there will be no impacts to the wider hydrological environment.
- 5.10. An outline construction programme should be provided.
- 5.11. Queries and requests for further information are summarised in Appendix 2. Until the additional information is provided, the BIA does not meet the criteria of CPG Basements.

## **Appendix 1: Residents' Consultation Comments**

Residents' Consultation Comments

| Surname | Address | Date     | Issue raised   | Response   |
|---------|---------|----------|--|--|
| Spitzer |         | 09/07/18 | Stability of proposed basement and impact of movement on upper level flats at Goldhurst Terrace. Impact of proposed basement on local hydrology. | Queries addressed in Section 4.  |
| CRASH   |         | 09/07/18 | Cumulative impact of proposed basement on local hydrology and hydrogeology   | BIA confirms the proposed development will not adversely impact the local hydrology and hydrogeology                         |
| Noel    |         | 08/07/18 | Cumulative impact of proposed basement on ground stability   | BIA addresses proposed construction methods and mitigation measures to maintain stability during and following construction. |
|         |         |          |  |  |
|         |         |          |  |  |
|         |         |          |  |  |
|         |         |          |  |  |
|         |         |          |  |  |



## **Appendix 2: Audit Query Tracker**

Audit Query Tracker

| Query No | Subject   | Query   | Status  | Date closed out |
|----------|-----------|---|---|-----------------|
| 1        | Stability | Structural proposal to confirm if building is already underpinned and adapt design, as required.  | Open  |                 |
| 2        | Stability | BIA recommends providing transitional underpins. This should be confirmed as part of the structural design with proposals revised, if required. | Open  |                 |
| 3        | Stability | Retaining wall design calculations to consider the walls as cantilever, as noted in BIA text / GMA.   | Open  |                 |
| 4        | Stability | Settlement curves discussed in section 4.7 to be provided for reference.  | Open  |                 |
| 5        | Stability | Monitoring proposals to be updated to include the upper floor flats at 71 Goldhurst Terrace.  | Open  |                 |
| 6        | BIA       | Arboricultural information to be provided to LBC to confirm impacts to root protection zones, as applicable.                                    | Note – arboricultural information for review by LBC's Tree & Landscape Officer. | Note Only       |
| 7        | BIA       | An outline construction programme should be provided.   | Open  |                 |

## **Appendix 3: Supplementary Supporting Documents**

None

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