

53 Glenmore Road,  
London, NW3 4DA

Basement Impact Assessment  
Audit

For  
London Borough of Camden

Project Number: 12466-82

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### Document Details

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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 53 Glenmore Road, London NW3 4DA (planning reference 2017/2579/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 involves modifying the property into self-contained flats by altering the internal arrangements. The BIA relates to the enlargement of the basement floor area to create habitable rooms at that level.
- 1.5. The BIA is produced by an organisation called LMB GEOSOLUTIONS LTD and forms part of the overarching Design & Access Statement by Martin Arnold Ltd. The author's qualifications CGeol for the hydrogeology and CEng for the Ground Movement Assessment and Flood Risk aspects are recognised as being in accordance with the LBC guidance.
- 1.6. The BIA does not appear to have been informed by a desk study in accordance with the LBC guidance. Confirmation that there is no London Underground infrastructure within 50m of the site is provided, however a full utilities search should be provided.
- 1.7. A limited site investigation has been undertaken, which appears to be appropriate to the scale of the proposed development is referred to in the BIA, although the information was not published on the Camden Planning Portal so we were unable to review and comment on it. Interpretative geotechnical parameters have not been presented suitable for foundation and retaining wall design purposes.
- 1.8. The BIA indicates that the proposed development will be founded in the London Clay using traditional underpins and embedded retaining walls. Statements are made about various parts of the design but do not appear to be backed up by a technical analysis – unless contained within the Construction Method Statement (CMS) which was not published on the Camden Planning Portal.
- 1.9. Drawings provided do not have any structural information included within them.

- 1.10. The BIA recommends movement monitoring should be undertaken at weekly intervals but makes no mention of details.
- 1.11. The Flood Risk Assessment states that the site is in Flood Zone 1 in an area of low to medium risk of surface water flooding.
- 1.12. The development does not result in an increase in impermeable site area.
- 1.13. Queries and matters requiring further information or clarification are discussed in Section 4 and summarised in Appendix 2. Until the additional information requested has been provided it is not possible to assess whether the requirements of CPG4 have been met.

## 2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 25 May 2017 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 53 Glenmore Road, London NW3 4DA, Camden Reference 2017/2579/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:
- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.
  - Camden Planning Guidance (CPG) 4: Basements and Lightwells.
  - Camden Development Policy (DP) 27: Basements and Lightwells.
  - Camden Development Policy (DP) 23: Water.
- 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 Audit Instruction described the planning proposal as: *"Subdivision of 2 No 1 Bedroom and 1 No 2 Bedroom partially self contained flat to fully self contained flats. Excavation of basement and side infill extension."*
- 2.6. The property is not listed but is noted as being within the Belsize Conservation Area.

2.7. CampbellReith accessed LBC's Planning Portal on 3 July 2017 and gained access to the following relevant documents for audit purposes:

- Design & Access Statement by Martin Arnold Ltd dated 05 May 2017 (with inclusive BIA by LMB GEOSOLUTIONS LTD dated March 2017).
- Flood Risk Assessment for Planning by Unda Consulting Limited dated March 2017.
- Drawings of existing front and rear elevations and floor plans by Martin Arnold Ltd.
- Drawings of proposed front and rear and floor plans by Martin Arnold Ltd.
- Heritage Statement by Martin Arnold Ltd.

### 3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	The BIA author has CGeol qualification and the Flood risk / GMA consultant has a CEng qualification.
Is data required by Cl.233 of the GSD presented?	No	Utility companies have not been approached with regards to underground infrastructure. In addition, a construction programme has not been made available.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	No	There is brief references made to structural temporary and permanent works with reference made to a Construction Management Plan that will be produced under separate cover but this could not be located on the Camden planning Portal.
Are suitable plans/maps included?	No	Reference mapping to evidence Screening assessment should be provided.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	No	Not provided.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Justification has been provided for No answers.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Justification has been provided for No answers.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Justification has been provided for No answers.



Item	Yes/No/NA	Comment
Is a conceptual model presented?	Partial	There is some attempt at a Ground Movement Assessment in the BIA and Appendix D but it is not clear what parameters have been used and what type of construction techniques have been analysed.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Screening and Scoping are a combined assessment. Very Slight damage is the worst predicted to number 51 Glenmore Road. As previously mentioned though, it is not clear what the construction techniques proposed to be used are.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	No significant issues are identified.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	No significant issues are identified.
Is factual ground investigation data provided?	No	Reference is made to a report entitled LMB Ground Investigation & Assessment which included borehole logs but this could not be located on the Camden planning Portal.
Is monitoring data presented?	Yes	A summary description from the Site Investigation report is tabulated in the BIA showing groundwater was located at 5.66 m during monitoring.
Is the ground investigation informed by a desk study?	No	Not known.
Has a site walkover been undertaken?	Yes	The BIA notes that a site walkover was undertaken and that minor cracking to brickwork was observed to external walls to the front and rear of the property, interior basement walls and ground floor.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Existing and proposed enlarged basement developments are stated as being at numbers 49 and 51 Glenmore Road, but do not appear to have been factored into the GMA.

Item	Yes/No/NA	Comment
Is a geotechnical interpretation presented?	Yes	Foundation allowable bearing pressures and heave pressures have been stated in the BIA, but without sight of the Site Investigation report, these values cannot be verified.
Does the geotechnical interpretation include information on retaining wall design?	No	Embedded retaining walls are mentioned as a design proposal based on a CIRIA guide, but without sight of the Construction Method Statement no details can be checked. Retaining wall designs are not shown on the structural proposal drawings either.
Are reports on other investigations required by screening and scoping presented?	Yes	Site investigation and Construction Method Statement documents to be published.
Are baseline conditions described, based on the GSD?	Yes	The presence of neighbouring basements has been confirmed.
Do the base line conditions consider adjacent or nearby basements?	No	Does not appear to take this into account in the Ground Movement Assessment.
Is an Impact Assessment provided?	Yes	Impact assessment summaries are provided for item carried forward from the screening and scoping stages.
Are estimates of ground movement and structural impact presented?	Partial	A ground movement assessment is provided in the BIA and Appendix D but it needs to be read in conjunction with the CMS which we await.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	The impact assessment addresses the points raised by screening and scoping.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Partially	Mitigation measures are briefly discussed such as the requirement for heave protection and surveying and monitoring of surrounding buildings but no greater levels of detail given.
Has the need for monitoring during construction been considered?	Partially	Construction monitoring is mentioned but no details given.

Item	Yes/No/NA	Comment
Have the residual (after mitigation) impacts been clearly identified?	Partially	Not discussed in detail.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	No structural calculations provided. Construction Method Statement to be submitted.
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	Assessment of impacts of adjacent basements is required.
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	Yes	
Are non-technical summaries provided?	Yes	

## 4.0 DISCUSSION

- 4.1. The BIA has been prepared by LMB GEOSOLUTIONS LTD and the Flood Risk Assessment has been prepared by Unda Consulting Ltd. The Design & Access statement has been prepared by Martin Arnold Ltd.
- 4.2. The BIA report is found within the Design & Access Statement and as such forms the majority of the document.
- 4.3. The authors' qualifications for hydrology and ground movement aspects are in accordance with CPG4 guidelines with the necessary Chartered status.
- 4.4. The BIA has not been informed by a desk study in line with GSD Appendix G1. It has been confirmed that there are no London Underground infrastructure below the site but in addition to this a full utilities search should be presented.
- 4.5. Reference is made to a Construction Method Statement which could not be located on the Camden Planning Portal. This should be published for CampbellReith to review and comment. This document should contain an outline construction programme.
- 4.6. Reference is made to a Ground Investigation & Assessment which could not be located on the Camden Planning Portal. This should be published for CampbellReith to review and comment.
- 4.7. The proposed structural drawings do not have any detail on them relating to the proposed form of basement construction and should be resubmitted for CampbellReith to review and comment.
- 4.8. Groundwater has been recorded in the site investigation logs 5.66m below ground level in the underlying London Clay which is classified as an unproductive strata. As such, considering this, it is accepted there will be no impact to the wider hydrogeological environment. There is likely to be a perched water table with significant volumes during construction unlikely.
- 4.9. The development does not result in an increase in impermeable site area and as such it is accepted that there will be no impact to the wider hydrological environment.
- 4.10. In the BIA it is confirmed that a site walkover was undertaken, where cracking was noted to existing walls at the front, rear and internal to the property. The Ground Movement Assessment does not mention this cracking nor attempts to give a cause for this.
- 4.11. Retaining wall and foundation underpinning has been referred to in the BIA but no structural calculations or drawings have been provided. Outline retaining wall and foundation design information should be presented for review and comment. Checks should be made that the foundation underpins are suitable depths in accordance with relevant guidance to avoid shrink /

swell movements that can be expected within London Clay, and should deeper foundations be required (e.g. due to the presence of roots being encountered during construction, for instance) then any potential impact on the terrace of houses should be further assessed. It is accepted that the depth of the proposed basement development is likely to be in the same order as adjacent existing basements / cellars on the same road and as such the development proposals are not likely to undermine existing foundations or affect other residential structures, however some attempt should be made to quantify these adjacent basement levels and these should be plotted on the structural drawings. Once utility infrastructure in the vicinity has been confirmed, damage impacts to any infrastructure within the zone of influence should be assessed. The site is within 5m of a highway / pavement which enhances the importance of the front retaining wall design where reference is made to a CIRIA guide C580 for Embedded Retaining Walls but no job specific details are given.

- 4.12 No temporary works design or sequencing is provided in the BIA which is a deficiency in the document.
- 4.13 An outline methodology and guidance for monitoring structural movements during construction should be provided which should reflect the actual ground / structural movements predicted, in accordance with LBC guidance.
- 4.14 The Flood Risk Assessment produced by Unda Consulting Limited states that the site is in Flood Zone 1 in an area of low to medium risk of surface water flooding. This document recommends that specific mitigation measures be adopted that ground floor and basement entry thresholds should be raised 300mm above adjacent ground levels to manage the flood risk. The BIA should confirm these measures will be incorporated into the final design.
- 4.15 Assessments should be reviewed once the additional information required has been presented, and the BIA and mitigation proposals updated, as required.
- 4.16 Non-technical summaries should be provided within any revisions to the BIA submitted.
- 4.17 Queries and matters requiring further information or clarification are summarised in Appendix 2.

## 5.0 CONCLUSIONS

- 5.1 The BIA is presented as part of the Design & Access Statement.
- 5.2 The author's qualifications are to the required standards.
- 5.3 Reference is made to a Construction Method Statement which could not be located on the Camden Planning Portal. This should be published for CampbellReith to review and comment.
- 5.4 Reference is made to a Ground Investigation & Assessment which could not be located on the Camden Planning Portal. This should be published for CampbellReith to review and comment
- 5.5 The BIA indicates that the proposed development will be founded in the London Clay. The depth of foundations to mitigate against shrink / swell / heave impacts should be confirmed.
- 5.6 Structural drawings showing design proposals and an outline description of temporary works suitable to the scale of development have not been provided. Outline embedded retaining wall design information to the front boundary of the property should be presented.
- 5.7 It is not likely that the development proposals will have adverse affects on the hydrological and hydrogeological water regimes in the vicinity.
- 5.8 An outline methodology and guidance for monitoring structural movements during construction should be provided, as well as a construction programme.
- 5.9 The flood risk assessment recommends specific mitigation measures be implemented relating to threshold levels which should be confirmed in the BIA that these measures will be incorporated into the final design.
- 5.10 Queries and matters requiring further information or clarification are summarised in Appendix 2. Until the additional information requested has been provided it is not possible to assess whether the requirements of CPG4 have been met.

## Appendix 1: Residents' Consultation Comments

None

## Appendix 2: Audit Query Tracker



Audit Query Tracker

Query No	Subject	Query	Status/Response	Date closed out
1.	BIA	A utilities search should be undertaken as standard practice in accordance with Arup guidance.	Open	
2.	BIA	Ground Investigation was not published on the Camden Planning Portal and should be made available for review and comment.	Open	
3.	Stability	Construction Method Statement was not published on the Camden Planning Portal and should be made available for review and comment.	Open	
4.	Stability	No structural calculations and drawings of the proposed scheme / temporary works were available for review. Expected to form part of the Construction Method Statement – see Query No. 2.	Open	
5.	Stability	The level of adjacent property basements should be quantified and included in the Ground Movement Assessment analysis.	Open	
6.	Stability	The site walkover made reference to exiting building cracking; however the Ground Movement Assessment is silent as to the cause of this. More detail proposals for building movement monitoring should be devised.	Open	
7.	Hydrology	The FRA discusses mitigation measures (Ground and Basement entry thresholds to be raised 300 mm above adjacent ground levels) but this is not carried through into the BIA as a design statement.	Open	

## Appendix 3: Supplementary Supporting Documents

None