INDEPENDENT AUDIT

of

BASEMENT IMPACT ASSESSMENT FOR PLANNING APPLICATION 2019/6344/P

In connection with the proposed development at

38 MEADOWBANK

LONDON

NW3 3AY

LBHGEO

LBH4610 May 2020

Document Control				
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0.1	26th May 2020	Issue to Client		Digitally signed by Seamus DN: cn=Seamus, o=LBH WEMBLEY, ou=Lefroy-Brooks, email=seamus@LBHGEO.co.uk, c=GB Date: 2020.05.26 11:56:38 +01'00'

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FOREWORD-GUIDANCE NOTES

GENERAL

This report has been prepared for a specific client and to meet a specific brief. The preparation of this report may have been affected by limitations of scope, resources or time scale required by the client. Should any part of this report be relied on by a third party, that party does so wholly at its own risk and LBHGEO disclaims any liability to such parties.

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Any use of or reliance upon the report in circumstances other than those for which it was commissioned shall be at the client's sole risk. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should therefore not be relied upon in such altered circumstances.

THIRD PARTY INFORMATION

The report may present an opinion based upon information received from third parties. However, no liability can be accepted for any inaccuracies or omissions in that information.

1. INTRODUCTION

It is proposed to construct a single storey basement beneath the existing building footprint and part of the garden of this property.

A planning application was submitted to the London Borough of Camden Council under reference 2019/6344/P on 23rd January 2020.

1.1 BRIEF

LBHGEO have been commissioned to provide an Independent audit of information submitted primarily against the requirements of the Camden Local Plan (2017) but with close reference to the procedures, processes and recommendations of the guidance in Camden Planning Guidance Basements (March 2018) and the associated Camden Geological, Hydrogeological and Hydrological Study 2010 (referred to as the 'Arup report').

1.2 REPORT STRUCTURE

This report commences with a description of the Camden Development Plan policy requirements, and then considers and comments on the submission made and details any concerns in regard to:

1. The level of information provided as required by CPG Basements 2018.
2. The proposed methodologies in the context of the site and the development proposals.
3. The soundness of the evidence presented and the reasonableness of the assessments made.
4. The robustness of the conclusions drawn and the mitigation measures proposed in regard to:
    a. maintaining the structural stability of the building and any neighbouring properties.
    b. avoiding adversely affecting drainage and run-off or causing other damage to the water environment and
    c. avoiding cumulative impacts on structural stability or the water environment in the local area
5. Any reasonable concerns about the technical content or considerations of the submission which should be addressed by the applicant by way of further submission prior to planning permission being granted.
6. Any reasonable considerations in respect of the structural integrity or condition of the road and neighbouring properties which would benefit from particular conditions being placed upon a planning approval.

1.3 INFORMATION PROVIDED

The information studied comprises the following:

1. Envirocheck Report by Landmark, dated 20th November 2018, Ref: 186657810_1_1
2. Ground Investigation by Ground Engineering, dated February 2019, Ref: C14648
3. Geotechnical Desktop Study by Campbell Reith, dated 18th March 2019, Ref: FDfd-13065-051218-DS-F1
4. Basement Construction Methodology and Outline Sequence of Works by Campbell Reith, dated 26th November 2019, Ref: APemb-13065-270319-CS, Rev F2
5. Basement Impact Assessment by Campbell Reith, dated 29th November 2019, Ref: NSemb-13065-270319-BIA, Rev F1
6. Design and Access Statement by Lyndon Goode Architects, dated 18th December 2019, unreferenced
7. Drawings of existing building by Lyndon Goode Architects, dated 19th December 2019, Ref: MBK-LGA-ZA-00-DR-A-001-00 to -001-03, -A-002-00 to -002-03, Rev B
8. Drawings of proposed development by Lyndon Goode Architects, dated 19th December 2019, Ref: MBK-LGA-ZA-XX-DR-A-010-00 , -010-01,-010-B1, -A-020-01 & -020-02, -A-030-01 & -030-02, RevB
9. Drawings of proposed development by Lyndon Goode Architects, dated 7th February 2020, Ref: MBK-LGA-ZA-XX-DR-A-020-03,-030-03 Rev A
10. Draft Construction Management Plan by Lyndon Goode Architects, undated, unreferenced
11. Traffic Management plan, unreferenced, undated

2. LOCAL PLAN POLICY A5 - BASEMENTS

The Policy A5 reads as follows:

The Council will only permit basement development where it is demonstrated to its satisfaction that the proposal would not cause harm to:

a. neighbouring properties;

b. the structural, ground, or water conditions of the area;

c. the character and amenity of the area;

d. the architectural character of the building; and

e. the significance of heritage assets.

In determining proposals for basements and other underground development, the Council will require an assessment of the scheme's impact on drainage, flooding, groundwater conditions and structural stability in the form of a Basement Impact Assessment and where appropriate, a Basement Construction Plan.

The siting, location, scale and design of basements must have minimal impact on, and be subordinate to, the host building and property. Basement development should:

f. not comprise of more than one storey;

g. not be built under an existing basement;

h. not exceed 50% of each garden within the property;

i. be less than 1.5 times the footprint of the host building in area;

j. extend into the garden no further than 50% of the depth of the host building measured from the principal rear elevation;

k. not extend into or underneath the garden further than 50% of the depth of the garden;

l. be set back from neighbouring property boundaries where it extends beyond the footprint of the host building; and

m. avoid the loss of garden space or trees of townscape or amenity value.

Exceptions to f. to k. above may be made on large comprehensively planned sites.

The Council will require applicants to demonstrate that proposals for basements:

n. do not harm neighbouring properties, including requiring the provision of a Basement Impact Assessment which shows that the scheme poses a risk of damage to neighbouring properties no higher than Burland Scale 1 'very slight';

o. avoid adversely affecting drainage and run-off or causing other damage to the water environment;

p. avoid cumulative impacts;

q. do not harm the amenity of neighbours;

r. provide satisfactory landscaping, including adequate soil depth;

s. do not harm the appearance or setting of the property or the established character of the surrounding area;
t. protect important archaeological remains; and
u. do not prejudice the ability of the garden to support trees where they are part of the character of the area.

The Council will not permit basement schemes which include habitable rooms and other sensitive uses in areas prone to flooding.

We will generally require a Construction Management Plan for basement developments.

Given the complex nature of basement development, the Council encourages developers to offer security for expenses for basement development to adjoining neighbours.

The following policies in the Local Plan are also relevant to basement development and are expected to be taken into account when assessing basement schemes:

- "Policy A1 Managing the impact of development";
- "Policy A2 Open space";
- "Policy A3 Biodiversity";
- "Policy D1 Design";
- "Policy D2 Heritage"; and
- "Policy CC3 Water and flooding".

In addition to the above 2017 Local Plan Policy, Camden have published in March 2018 the Camden Planning Guidance (CPG) Basements to support the policies in the Local Plan. The CPG is also associated with the 2010 Camden Geological, Hydrogeological and Hydrological Study (CGHHS, the Arup Report).
These documents, while not carrying the same weight as the Camden Development Plan policies, provide the requirements to be satisfied by the Basement Impact Assessment process and can be used as a means of assessment of the completeness of a BIA submission.

3. ASSESSMENT OF ADEQUACY OF INFORMATION PROVIDED

3.1 BASEMENT IMPACT ASSESSMENT STAGES

The methodology described in the CGHHS for assessing the impact of a proposed basement with regard to the matters described in A5 takes the form of a staged approach.

The staged approach was followed in the submitted BIA (Document 5) and a non-technical summary for the BIA document is provided. Separate non-technical summaries for the Screening and the Scoping stages are also provided.

3.1.1 STAGE 1: SCREENING

Screening uses checklists to identify whether there are matters of concern (with regard to hydrogeology, hydrology or ground stability) which should be investigated using a BIA (Section 6.2 and Appendix E of the CGHSS) and is the process for determining whether or not a BIA is required. There are three checklists as follows:

- subterranean (groundwater) flow
- slope stability
- surface flow and flooding

3.1.1.1 SUBTERRANEAN (GROUNDWATER) FLOW

A screening checklist for the impact of the proposed basement on groundwater is included in the BIA (Document 5).

This identifies no potential issues of concern.

3.1.1.2 STABILITY

A screening checklist for the impact of the proposed basement on land stability is included in the BIA (Document 5).

This identifies the following potential issues of concern:

- **The site is within a wider hillside setting in which the general slope is greater than 7 degrees (approximately 1 in 8).**
- **London Clay is the shallowest strata at the site.**
- **The site is within 5m of a highway or pedestrian right of way.**
- **The proposed basement will significantly increase the differential depth of foundations relative to the neighbouring properties.**

3.1.1.3 SURFACE FLOW AND FLOODING

A screening checklist for the impact of the proposed basement on surface water flow and flooding is included in the BIA (Document 5).

This identifies the following potential issue of concern:

- **The site is in an area identified to be at risk from sewer flooding.**

3.1.2 STAGE 2: SCOPING

Where the checklist is answered with a “yes” or “unknown” to any of the questions posed in the flowcharts, these matters are carried forward to the scoping stage of the BIA process.

The scoping produces a statement which defines further the matters of concern identified in the screening stage. This defining should be in terms of ground processes, in order that a site specific BIA can be designed and executed (Section 6.3 of the CGHSS).

Checklists have been provided in the BIA and there is a scoping stage described in the BIA.

The issues identified from the checklists as being of concern have been assigned bold text in the previous sections and are as follows:

- **The site is within a wider hillside setting in which the general slope is greater than 7 degrees (approximately 1 in 8).**
  The guidance advises that there may be local slope instability within and adjoining the site.

- **London Clay is the shallowest strata at the site.**
  The guidance advises that of the at-surface soil strata present in LB Camden, the London Clay is the most prone to seasonal shrink-swell (subsidence and heave).

- **The site is within 5m of a highway or pedestrian right of way.**
  The guidance advises that excavation for a basement may result in damage to the road, pathway or any underground services buried in trenches beneath the road or pathway.

- **The proposed basement will significantly increase the differential depth of foundations relative to the neighbouring properties.**
  The guidance advises that excavation for a basement may result in structural damage to neighbouring properties if there is a significant differential depth between adjacent foundations.

- **The site is within an area identified to be at risk of sewer flooding.**
  The guidance advises that a Flood Risk Assessment is required in accordance with PPS25.

3.1.3 STAGE 3: SITE INVESTIGATION AND STUDY

Site investigation and study is undertaken to establish the baseline conditions. This can be done by utilising existing information and/or by collecting new information (Section 6.4 of the CGHSS).

A site walkover was undertaken as part of the Geotechnical Desk Study (Document 6).

An intrusive investigation was undertaken by Ground Engineering in December 2018 (Document 2). One borehole managed to penetrate the made ground and prove the London Clay.

3.1.4 STAGE 4: IMPACT ASSESSMENT

Impact assessment is undertaken to determine the impact of the proposed basement on the baseline conditions, taking into account any mitigation measures proposed (Section 6.5 of the CGHSS).

The submitted BIA (Document 5) includes an Impact Assessment stage and the following statements are made:

- **The site is within a wider hillside setting in which the general slope is greater than 7 degrees (approximately 1 in 8).**

  "…the proposed basement construction is not expected to cause any slope instability given the topography of the site and its surroundings."

- **London Clay is the shallowest strata at the site.**
  "The following actions are recommended:"
  "An assessment of whether the tree roots in the neighbouring property are likely to be affected by the works and careful workmanship to ensure minimal impact if required;"

- **The site is within 5m of a highway or pedestrian right of way.**
  "The following actions are recommended:"
  "The owner of the adjacent roads/pavements (likely to be the London Borough of Camden) should be consulted to establish associated constraints;"

- **The proposed basement will significantly increase the differential depth of foundations relative to the neighbouring properties.**
  "Ground movements and building strains on the neighbouring properties within the theoretical zone of influence fall within Category 1."

- **The site is within an area identified to be at risk of sewer flooding.**
  "Consideration should be given to the installation of non-return valves to prevent backflow into the basement."
  "The following actions are recommended:"
  "Statutory undertakers, including Thames Water and other utility operators should be consulted to establish any associated constraints"

3.2 THE AUDIT PROCESS

The audit process is based on reviewing the BIA against the criteria set out in Section 6 of the CGHSS and requires consideration of specific issues:

3.2.1 QUALIFICATIONS / CREDENTIALS OF AUTHORS

Check qualifications / credentials of author(s):

Qualifications required for assessments

Surface flow and flooding	A Hydrologist or a Civil Engineer specialising in flood risk management and surface water drainage, with either: • The "CEng" (Chartered Engineer) qualification from the Engineering Council; or a Member of the Institution of Civil Engineers ("MICE"); or • The "C.WEM" (Chartered Water and Environmental Manager) qualification from the Chartered Institution of Water and Environmental Management.
Subterranean (groundwater) flow	A Hydrogeologist with the "CGeol" (Chartered Geologist) qualification from the Geological Society of London.
Land stability	A Civil Engineer with the "CEng" (Chartered Engineer) qualification from the Engineering Council and specialising in ground engineering; or A Member of the Institution of Civil Engineers ("MICE") and a Geotechnical Specialist as defined by the Site Investigation Steering Group. With demonstrable evidence that the assessments have been made by them in conjunction with an Engineering Geologist with the "CGeol" (Chartered Geologist) qualification from the Geological Society of London.

The Authors meet the above requirements.

3.2.2 BIA SCOPE

Check BIA scope against flowcharts (Section 6.2.2 of the CGHSS).

The BIA has addressed the issues raised by the screening

3.2.3 DESCRIPTION OF WORKS

Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?

Yes, but there appears to be an important discrepancy between the Traffic Management Plan (Document 11) and the Structural Engineers construction methodology set out in Document 4. Figure 2 of Document 11 suggests that the site will be accessed through the rear of a garage below the adjacent property (No. 39 Meadowbank).

3.2.4 INVESTIGATION OF ISSUES

Have the appropriate issues been investigated? This includes assessment of impacts including land stability, hydrology and hydrogeology.

It has not been possible to confirm the detailed nature of the foundations to the existing building. It is possible that the existing structure may be to some extent supported upon piled foundations but there is a proposal for additional investigation prior to commencement of the basement excavation.

These trial shafts may also be used to confirm whether or not there will be a need for mitigation to intercept possible water ingress at the surface of the London Clay.

3.2.5 MAPPING DETAIL

Is the scale of any included maps appropriate? That is, does the map show the whole of the relevant area of study and does it show sufficient detail?

Yes, but it is acknowledged that there remains some details of the existing below-ground structures to be determined.

There is an apparent conflict between the Traffic Management plan and the Basement Construction Methodology and Sequence of Works. This must be resolved.

3.2.6 ASSESSMENT METHODOLOGY

Have the issues been investigated using appropriate assessment methodology?

Yes, the assessment has been made using a numerical Ground Movement Assessment and the damage category criteria set out in policy A5.

3.2.7 MITIGATION

Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme? (Section 5 of the CGHSS)

Yes, albeit that a review of the mitigation required may be necessary if the construction methodology is to be that suggested by the traffic management plan, using access via an existing adjoining garage that is set at a low level.

3.2.8 MONITORING

Has the need for monitoring been addressed and is the proposed monitoring sufficient and adequate? (Section 7.2.3 of the CGHSS)

A ground movement monitoring strategy has been specified and outlined in Section 10 of the BIA (Document 5).

3.2.9 RESIDUAL IMPACTS AFTER MITIGATION

Have the residual (after mitigation) impacts been clearly identified?

Yes, albeit that a review of the potential impacts may be necessary if the construction methodology is to be that suggested by the traffic management plan, using access via an existing adjoining garage that is set at a low level. This might require additional excavation to that which has been considered by the engineers.

Section 9 of the BIA states *"Residual risks were shown to exist for stability only(…)"* and "*Ground movements and building strains on the neighbouring properties within the theoretical zone of influence fall within Category 1."*

4. ASSESSMENT OF ACCEPTABILITY OF RESIDUAL IMPACTS

4.1 PROPOSED CONSTRUCTION METHODOLOGY

The structural engineer's proposed construction methodology (Document 4) states

"…temporary works will be installed to support floors and masonry walls above. The internal walls will then be demolished followed by breaking out the existing slab at ground floor level, carefully cutting back the existing footings as required.

Underpinning is to be carried out in maximum 1m wide sections in shaft excavations in a 'hit and miss' sequence. Temporary propping is to be installed as the excavation progresses to ensure that ground movements are minimised.

Once the underpinning is completed, the basement slab will be cast in sections on a blinding. It is assumed the basement slab would be 225mm thick reinforced concrete with 400mm deep local thickenings under all concrete walls and around the perimeter."

However, the traffic management plan suggested that the works will be undertaken using access via an existing adjoining garage that is set at a low level. This would require a revised engineering methodology.

4.2 SOUNDNESS OF EVIDENCE PRESENTED

Evidence has been provided to justify the potential acceptability of the scheme, although there remains some uncertainly regarding the detailed methodology.

4.3 REASONABLENESS OF ASSESSMENTS

The criteria used for the assessments meet the policy standards but additional assessment will be required if the stated methodology is to be altered to align with the indications of the present traffic management plan.

4.4 ROBUSTNESS OF CONCLUSIONS AND PROPOSED MITIGATION MEASURES

The conclusions appear to be sufficiently robust to meet the requirements of Policy A5 but a review will be required if the stated methodology is to be altered to align with the indications of the present traffic management plan.

5. CONCLUSIONS

The BIA reflects the processes, procedures and requirements set out in Local Plan policy A5, the CPG Basements (2018) and DP27.

The BIA satisfactorily demonstrates that, using a numerical ground movement assessment with what may be considered to be “worst case” assumptions, the development is expected to pose a risk of damage to neighbouring properties no higher than Burland Scale 1 ‘very slight’.

However, there appears, from the indications of the present Traffic Plan (Document 11), referred to in the Construction Management Plan (Document 10), to be a construction methodology proposal being considered that is different to that set out by the structural engineer in Document 4.

It is respectfully suggested that before a planning determination is made the contents of these three documents should be aligned to remove any possible misunderstanding or contradiction in regards to the proposed methodology and should be resubmitted as necessary.

The stated concerns of those local residents who have objected to the project can be better assessed once there is clarity about the construction methodology and sequence of work.

AUDIT QUERY TRACKER

Query Ref.	Subject	Query	Status
1	Land Stability	There appears, from the indications of the present Traffic Plan (Document 11), referred to in the Construction Management Plan (Document 10), to be a construction methodology proposal being considered that is different to that set out by the structural engineer in Document 4. These three documents need to be aligned and the submission reviewed and revised as necessary	Open