Independent Review
of
Basement Impact Assessment for planning application 2014/4658/P
at

Flat 1
27 Oakhill
London
NW3 7RD

for
London Borough of Camden

LBH4275

October 2014

LBH WEMBLEY

Geotechnical & Environmental

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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 LBH WEMBLEY Geotechnical & Environmental disclaims any liability to such parties.

The observations and conclusions described in this report are based solely upon the agreed scope of work. LBH WEMBLEY Geotechnical & Environmental has not performed any observations, investigations, studies or testing not specifically set out in the agreed scope of work and cannot accept any liability for the existence of any condition, the discovery of which would require performance of services beyond the agreed scope of work.

VALIDITY

Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances shall be at the client's sole and own 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 the future and any such reliance on the report in the future shall again be at the client's own and sole risk.

THIRD PARTY INFORMATION

The report may present an opinion on the disposition, configuration and composition of soils, strata and any contamination within or near the site 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 level of basement extending to around 5m depth beneath the rear patio and extending back beneath part of the garden.

1.1 Brief

LBH WEMBLEY Geotechnical & Environmental have been commissioned to provide an Independent assessment of information submitted against the requirements of LDF policy DP27 (but also including CS5, CS14, CS15, CS17, CS18, DP23, DP24, DP25 and DP26 – as stated at paragraphs 1.5 and 1.6 of CPG4) and with reference to the procedures, processes and recommendations of the Arup Report and CPG4 2013.

1.2 Report Structure

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

1. The level of information provided (including the completeness of the submission and the technical sufficiency of the work carried out)
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

1.3 Information Provided

The information studied comprises the following:

1. Basement Structural Method Statement by Croft Structural Engineers, dated 2nd July 2014, Ref: 140513
2. Design & Access Statement by The Basement Design Studio, dated July 2014, unreferenced.
3. Construction Management Plan by London Basement, dated July 2014, unreferenced.
4. Arboricultural Report by Tree Sense, dated 15th July 2014, Ref: TBDS_27OA_AIA_001.
5. Proposed Drawings by The Basement Design Studio, dated June 2014, Ref: 12-011-02.
6. Existing Drawings by The Basement Design Studio, dated March 2014, Ref: 14-011-01.

2. Policy DP27 – Basements and Lightwells

The CPG4 Planning Guidance on Basements and Lightwells refers primarily to Planning Policy DP27 on Basements and Lightwells.

The DP27 Policy reads as follows:

In determining proposals for basement and other underground development, the Council will require an assessment of the scheme's impact on drainage, flooding, groundwater conditions and structural stability, where appropriate. The Council will only permit basement and other underground development that does not cause harm to the built and natural environment and local amenity and does not result in flooding or ground instability. We will require developers to demonstrate by methodologies appropriate to the site 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 we will consider whether schemes:

d) harm the amenity of neighbours;
e) lead to the loss of open space or trees of townscape or amenity value;
f) provide satisfactory landscaping, including adequate soil depth;
g) harm the appearance or setting of the property or the established character of the surrounding area; and
h) protect important archaeological remains.

The Council will not permit basement schemes which include habitable rooms and other sensitive uses in areas prone to flooding. In determining applications for lightwells, the Council will consider whether:

i) the architectural character of the building is protected;
j) the character and appearance of the surrounding area is harmed; and
k) the development results in the loss of more than 50% of the front garden or amenity area.

In addition to DP27, the CPG4 Guidance on Basements and Lightwells also supports the following Local Development Framework policies:

Core Strategies:

- CS5 Managing the impact of growth and development
- CS14 Promoting high quality places and conserving our heritage
- CS15 Protecting and improving our parks and open spaces & encouraging biodiversity
- CS17 Making Camden a safer place
- CS18 Dealing with our waste and encouraging recycling

Development Policies:

- DP23 Water
- DP24 Securing high quality design
- DP25 Conserving Camden's heritage
- DP26 Managing the impact of development on occupiers and neighbours

This report makes some specific further reference to these policies but relies essentially upon the technical guidance provided by the Council in November 2010 to assist developers to ensure that they are meeting the requirements of DP27, which is known as the Camden Geological, Hydrogeological and Hydrological Study, Guidance for Subterranean Development (CGHHS), and was prepared by Arup.

3. Assessment of Adequacy of Information Provided

3.1 Basement Impact Assessment Stages

The methodology described for assessing the impact of a proposed basement with regard to the matters described in DP27 takes the form of a staged approach.

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 1).

This identifies the following potential issues of concern:

- **The site is within 100m of a watercourse, well (used/disused) or potential spring line.**
- **The proposed development will result in a change in the area of hard-surfaced/paved areas.**
- **The lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) is close to or lower than the mean water level in any local pond or spring line.**

3.1.1.2 Slope Stability

A screening checklist for the impact of the proposed basement on land stability is included in the BIA (Document 1).

This identifies the following potential issues of concern:

- **London Clay is the shallowest strata at the site.**
- **The site is within 100m of a watercourse or a potential spring line.**
- **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 1).

This identifies the following potential issues of concern:

- **The proposed basement development will result in a change in the proportion of hard-surfaced/paved areas.**

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 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 100m of a watercourse, well (used/disused) or potential spring line.**
  The guidance advises that the flow from a spring, well or watercourse may increase or decrease if the groundwater flow regime which supports that water feature is affected by a proposed basement. If the flow is diverted, it may result in the groundwater flow finding another location to issue from with new springs forming or old springs being reactivated. A secondary impact is on the quality of the water issuing or abstracted from the spring or water well respectively.

- **The proposed development will result in a change in the area of hard-surfaced/paved areas.**
  The guidance advises that a change in the in proportion of hard surfaced or paved areas of a property will affect the way in which rainfall and surface water are transmitted away from a property. This includes changes to the surface water received by the underlying aquifers, adjacent properties and nearby watercourses. Changes could result in decreased flow, which may affect ecosystems or reduce amenity, or increased flow which may additionally increase the risk of flooding.

- **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 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 lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) is close to or lower than the mean water level in any local pond or spring line.**
  The guidance advises that groundwater may drain from the pond or spring and flow into the basement/excavation space.

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).

The site investigation submitted comprised one 6m continuous flight auger borehole.

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 1) includes an Impact Assessment stage. The following comments are provided.

- **The site is within 100m of a watercourse, well (used/disused) or potential spring line.**
- **The lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) is close to or lower than the mean water level in any local pond or spring line.**

"Site is located on low permeability London Clay" and *"The site investigation indicated that no water is present down to a depth of 6m."*

- **The proposed development will result in a change in the area of hard-surfaced/paved areas.**

"The flow of surface water from the rear light well is minimal and will be incorporated into the basement drainage."

- **London Clay is the shallowest strata at the site.**

"Design using NHBC guidance" and *"Given the depth of the basement, the bottom of the foundations will be lower and beyond the area of soil that will be affected by the influence of trees."*

- **The proposed basement will significantly increase the differential depth of foundations relative to the neighbouring properties.**

"The main building is four storeys high and contains multiple dwellings. However it is not directly above the proposed basement: the main dwelling will not be affected by the proposed works."
"The predicted category of damage is likely to be within the BRE Category Slight, with possible localised crack widths 2mm to 5mm. Classification Aesthetic"

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.

Surface flow and flooding: The report does appear to meet the requirements.

Subterranean (groundwater) flow: The report does **NOT** appear to meet the requirements.

Land stability: The report does **NOT** appear to meet the requirements.

3.2.2 BIA Scope

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

The scope of potential issues of concern has been checked against the flowcharts and is considered reasonable.

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?

No information appears to have been provided on the temporary propping required to achieve to prevent damaging ground movements.

3.2.4 Investigation of Issues

Have the appropriate issues been investigated? This includes assessment of impacts with respect to DP27 including land stability, hydrology, hydrogeology.

No information has been provided on the configuration of the existing foundations to either the host building or the neighbouring properties.

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?

No. The relationship between the proposed basement and neighbouring structures is not clear.

3.2.6 Assessment Methodology

Have the issues been investigated using appropriate assessment methodology? (Section 7.2 of the CGHSS).

It is noted that the configuration of the existing foundations has not been confirmed and that the apparent absence of groundwater has not been confirmed by standpipe monitoring.

It is not clear how the predicted damage category was arrived at. No assessment of basement heave appears to have been undertaken although there appears to be an intention to include a compressible layer beneath the new basement.

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)

No information appears to have been provided on the temporary propping required to achieve to prevent damaging ground movements during the works.

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)

Yes.

3.2.9 Residual Impacts after Mitigation

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

Yes.

4. Assessment of Acceptability of Residual Impacts

4.1 Proposed Construction Methodology

The proposed construction methodology appears generally sound but the temporary works have not been fully described.

4.2 Soundness of Evidence Presented

The evidence would be improved by a better investigation and survey information.

4.3 Reasonableness of Assessments

The assessments appear reasonable.

4.4 Robustness of Conclusions and Proposed Mitigation Measures

The robustness of the conclusions would be improved by a better investigation and survey information. For example, contrary to the indications of the block plan provided in Document 6 it appears that the new basement will commence at or beyond the rearmost extension of the adjacent property at No. 30 Oakhill.

5. Conclusions

The submitted BIA generally, but not wholly, follows the processes and procedures set out in DP27 and CPG4. The document does not appear to have been prepared or checked by persons holding the correct qualifications.

As a consequence it must unfortunately be considered that the present submission does not accord with DP27, in respect of:

a. Maintaining the structural stability of the building and any neighbouring properties
b. Avoiding adverse impact on drainage and run-off or causing other damage to the water environment and
c. Avoiding cumulative impacts on structural stability or the water environment

It is suggested that the concerns about the submission that have been raised in sections 3 and 4 of this document can be addressed by the applicant by way of further submission.

5.1 Further Information Required

It is considered that in order to meet the requirements of DP27 further information is required as follows:

- Information on the plan and sectional relationship between the proposed basement excavation and all adjacent foundations to the host and neighbouring properties. (Where information is not obtainable then the assumed configuration should be clearly demonstrated).

With the benefit of this further information, the BIA should then be revised and updated accordingly to address the concerns about the submission that have been raised in sections 3 and 4 and presented or countersigned by persons holding the required qualifications in order to be considered compliant.

It is envisaged that, at the discretion of the council, this further information and assessment might reasonably be sought by condition that it should be approved by Camden prior to the commencement of any work.