Independent Review

of

Basement Impact Assessment for planning application 2017/2794/P

(Minor Material Amendment to 2015/4553/P)

in connection with

planned development at

254-256 Camden Road
London
NW1 9HF

for

London Borough of Camden

LBH4382

Ver 2.0

July 2017

LBH WEMBLEY

ENGINEERING

Project No: LBH4382

Report Ref: **LBH4382 Ver 2.0**

Date: 31st July 2017

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1. Introduction

Proposed development at this site includes demolition and replacement of a two-storey building with a partial undercroft basement on Camden Mews with a three storey building comprising flats with a single storey basement. A planning application was made under reference 2015/4553/P and permission was granted on 1st December 2016 subject to a Section 106 legal agreement.

A minor material application has subsequently been submitted (Ref: 2017/2794/P) which seeks to change the footprint and arrangement of the basement to the proposed building on Camden Mews.

1.1 Brief

LBH WEMBLEY Geotechnical & Environmental have been commissioned to provide an Independent assessment 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 4 (CPG4 2015) and 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 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 drainage, flooding, groundwater conditions and structural stability

1.3 Information Provided

The information studied comprises the following:

1. Basement Impact Assessment by Campbell Reith, dated 8th July 2015, Ref: FDemb-020715-12047-BIA-F
2. Ground Movement Assessment by Campbell Reith, dated 2nd July 2015, Ref: FDemb-12047-020715-GMA-F1
3. Geotechnical and Geoenvironmental Desktop by Campbell Reith, dated 8th July 2015, Ref: FDli-12047-020715-DS-F1
4. Design and Access Statement by Archadia Architects, dated August 2015, unreferenced
5. Arboricultural Site Appraisal by D F Clarke Bionomique, dated 26th November 2014, Ref: DFCP 3353
6. Drawings of existing buildings by Archadia Architects, dated 4th July 2014, Ref: OH233-0-21 P1 and -22 P1
7. Drawings of proposed buildings by Archadia Architects, dated 4th July 2014, Ref: OH233-3-01 P1, OH233-1-01 P1, -05 P1 and -06 P1
8. Tree Survey Plan by D F Clarke Bionomique, dated 27th October 2014, Ref: DFC P3353TSP

9. Letter to Mark Wells from D F Clarke Bionomique, dated 25th May 2017, unreferenced
10. Letter to Camden from Campbell Reith, dated 1st June 2017, Ref: FDfd-12047-010617-Ashton Court.doc
11. Schedule of Planning Drawing Changes by Calford Seaden, undated, Ref: K160423 – Ashton Court – Rev004
12. Drawings of proposed buildings by Calford Seaden, Ref: K160423 A(0)101,110,111revB, A(2)200rev4, 220rev4, 240rev5, 260rev4, 280rev1, 300rev7 ,301rev6, 310, 320rev5, 321rev4, 401rev6, 402rev5, 403rev4, 900rev2

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 will be taken into account when assessing basement schemes:

- "Policy A2 Open space";
- "Policy A3 Biodiversity";
- "Policy D1 Design";
- "Policy D2 Heritage"; and
- "Policy CC3 Water and flooding".

In addition to the Local Plan Policy Camden publishes Camden Planning Guidance on Basements and Lightwells. These CPG documents do not carry the same weight as the main Camden Development Plan documents (including the above Policy A5) but they are important supporting documents.

It is noted that the current CPG4 Planning Guidance on Basements and Lightwells (2015) has not yet been updated to reflect the Local Plan and refers primarily to the now withdrawn Planning Policy DP27 on Basements and Lightwells.

It should be noted that the Basement Impact Assessment for the previous application had been prepared and was judged against the 2013 version of CPG4, not the 2015 version.

This report relies essentially upon the current policy A5 as stated above and also upon the technical guidance provided by the Council in November 2010 entitled the Camden Geological, Hydrogeological and Hydrological Study, Guidance for Subterranean Development (CGHHS) or the 'Arup Report'.

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.

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

3.1.1.2 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.**
- **There is a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects 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 1).

This identifies the following potential issue 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 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 proposed development will result in a change in the area of hard-surfaced/paved areas.**
  The guidance advises that the sealing off of the ground surface by pavements and buildings to rainfall will result in decreased recharge to the underlying ground. In areas underlain by an aquifer, this may impact upon the groundwater flow or levels. In areas of non-aquifer (i.e. on the London Clay), this may mean changes in the degree of wetness which in turn may affect stability.
  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).

- **There is a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site.**
  The guidance advises that there are multiple potential impacts depending on the specific setting of the basement development. For example, in terraced properties, the implications of a deepened basement/foundation system on neighbouring properties should be considered.

- **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.

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 a single window sample hole to 10m below ground level and two foundation inspection pits. A single groundwater and gas monitoring visit was also undertaken.

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) does include an Impact Assessment stage and the following statement are made:.

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

"*The increase is minimal (approximately 65m²). There is considered to be no adverse impact … This issue is considered to be of minor significance.*"

"*The impact of the development on surface water flooding is considered to be negligible.*"

- **There is a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site.**

"*…the proposed basement level is beyond the recommended founding depth derived from NHBC Standards Part 4: Chapter 4.2, Building near trees [10]. This is therefore of neutral significance.*"

- **The site is within 5m of a highway or pedestrian right of way.**

"*The owner of the adjacent highways (likely to be the London Borough of Camden) should be consulted to establish associated constraints;*

Statutory undertakers, including utility operators, should be consulted to establish if any such assets could be affected by the works and associated constraints"

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

Analysis of the predicted ground movement related to the closest building, 103 Camden Mews, suggests that "*a maximum damage category of 'slight' (Burland Category 2)*" can be achieved and that "*Ground movements and building strains on the remaining properties within the theoretical zone of influence are negligible.*"

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 of the original Basement Impact Assessment (Document 1) prepared for the previous scheme met the above requirements but it is necessary for the same level of scrutiny to be applied to the assessment of whether that BIA is applicable to the new scheme and there is not evidence that this has been achieved.

The author of Document 12 unfortunately does not appear to hold the qualifications required for review of the predicted effects on the stability of the neighbouring properties, the hydrogeology of the area and surface water or flooding risk.

3.2.2 BIA Scope

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

Document 8 indicates that one tree will be removed from the garden area to the southwest of the site, adjacent to the proposed basement.

- **Trees will be felled as part of the proposed development and/or works are proposed within tree protection zones where trees are to be retained**
  The guidance advises that the soil moisture deficit associated with felled tree will gradually recover. In high plasticity clay soils (such as London Clay) this will lead to gradual swelling of the ground until it reaches a new value. This may reduce the soil strength which could affect the slope stability. Additionally the binding effect of tree roots can have a beneficial effect on stability and the loss of a tree may cause loss of stability.

Document 8 states "*One tree will be removed to facilitate the development. The tree has poor form and structural issues within the crown, resulting from historic pruning and mis-management, as well as outgrowing its location. The tree will be replaced*…"

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. The new scheme has not really been described in detail.

Document 11 present the new scheme as a *"Fundamental redesign*" to *"Create a habitable living space at basement level".* This has resulted in the creation of new external lightwells and basement terrace areas where possible at the rear of the properties. It is estimated that the revised scheme will increase the area of basement excavation by some 15%, which may be significant.

It is also noted that the new scheme involves a deeper excavation, to *+45.550-3.000-(?500mm slab)* = +42.05m compared to *+43.080-(?500mm slab)* = +42.58m. This approximate 15% increase in excavation depth may also be significant.

3.2.4 Investigation of Issues

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

No. Planning guidance has progressed since the previous BIA and the amount of ground investigation undertaken for this scheme appears to be somewhat inadequate. In addition, the nature of the foundations to the adjacent building at 103 Camden Mews have apparently not been confirmed.

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?

The line of the proposed sheet piling is not indicated.

3.2.6 Assessment Methodology

Have the issues been investigated using appropriate assessment methodology?

No. The assessment should be made using the damage category criteria set out in policy A5 (and refer to the updated CIRIA guidance, C760, for the movement of the embedded steel sheet pile walls.)

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)

Mitigation has been considered, but the adequacy of the proposed mitigation needs to be confirmed for the new scheme..

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)

No. A monitoring strategy has not yet been developed. Document 1 states "*Consideration should be given to the potential need for monitoring of ground and building movements*".

3.2.9 Residual Impacts after Mitigation

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

Document 1 states *"A ground movement assessment… confirms that any damage to neighbouring structures can be limited to 'slight' (Burland Category 2) using normal construction techniques."*

Under the present policies, this level of movement is to be considered unacceptable.

4. Assessment of Acceptability of Residual Impacts

4.1 Proposed Construction Methodology

The proposed construction methodology appears appropriate.

4.2 Soundness of Evidence Presented

The evidence that has been provided is not considered sufficient to justify the acceptability of the revised scheme.

4.3 Reasonableness of Assessments

The criteria used for the assessments do not meet current policy standards, and the present assessments should be revised to take full account of the slightly larger and deeper basement now proposed.

4.4 Robustness of Conclusions and Proposed Mitigation Measures

The conclusions made in Document 10 do not appear to be sufficiently robust to meet the requirements of Policy A5.

5. Conclusions

The submitted BIA reflects the processes and procedures set out in DP27 and CPG4 (2013), and does not reflect the requirements of CPG4(2015) or, more importantly, Policy A5 of the new Local Plan.

Given the intended scheme and form of construction it is considered that the submission may be considered sufficient to accord with A5 in respect of drainage, flooding and groundwater conditions.

However, the submission does not demonstrate that the scheme poses a risk of damage to neighbouring properties no higher than Burland Scale 1 ‘very slight’.

It is therefore suggested that, ideally following additional site investigation and determination of the nature and configuration of the neighbouring foundations, the ground movement assessment and BIA should be reworked to provide the required assurance that Burland Category 1 conditions will not be exceeded.