

**Independent Review
of
Basement Impact Assessment for
planning application 2015/3076/P
at**

**Cape of Good Hope Public House
78 Albany Street
London
NW1 4EE**

**for
London Borough of Camden**

LBH4353a

July 2015

LBH
WEMBLEY



**Geotechnical &
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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 demolish the existing Cape of Good Hope Public House and associated basement and to construct a new six storey residential block. The existing basement is to be deepened by approximately 0.75m and extended slightly southwards.

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. Cape of Good Hope Public House Basement Impact Assessment by Campbell Reith, dated 1st May 2015, Ref: 11775 F1
2. Preliminary Geotechnical Report by Campbell Reith, dated 1st May 2015, Ref: MLWemb-11775-130515-RPE Geotech F3
3. Outline Construction and Environmental Management Plan by Campbell Reith, dated 14th May 2015, Ref: RJrj11775-140515 CEMP F1
4. Drawings of Proposed by Matthew Lloyd Architects, dated February 2015, Ref: COGH-SK150416
5. Drawings of Proposed by Matthew Lloyd Architects, dated May 2015, Refs: 3050,3120 to 3122, 3199, 3200, 3220 to 3223, 3250 and 3251

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 located directly above an aquifer.**
- **The proposed development will result in a change in the area of hard-surfaced/paved areas.**
- **More surface water (e.g. rainfall and run-off) than at present will be discharged to the ground (e.g. via soakaways and/or SUDS).**

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:

- **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 site is located directly above an aquifer.**
The guidance advises that the basement may extend into the underlying aquifer and thus affect the groundwater flow regime.
- **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.
- **More surface water (e.g. rainfall and run-off) than at present will be discharged to the ground (e.g. via soakaways and/or SUDS).**
The guidance advises that in areas underlain by an aquifer, this may impact upon the groundwater flow or levels – this would then have similar impacts to those listed in 1b) and 2). 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 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 investigations reported comprised a cable percussive borehole and three percussive sampler holes. A single groundwater standpipe has been installed and monitored.

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 comments are made:.

- **The site is located directly above an aquifer.**

“A ‘worst credible’ groundwater level of 24.10m OD has been adopted. This places the groundwater table approximately 2.00m below the base of the proposed excavation.”

“... the proposed development is not anticipated to intersect the groundwater table.”

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

“The current development proposal includes the replacement of circa 73m² of hard standing with soft landscaping. The decrease in hard surfacing will lead to an increase in infiltration of surface water into the underlying aquifer. The site is underlain by up to 2.80m of predominantly granular Made Ground over cohesive deposits of the Langley Silt Member. Any infiltration is likely to be primarily into the Made Ground. However, given its volume above, this issue is considered to be of neutral significance.”

- **More surface water (e.g. rainfall and run-off) than at present will be discharged to the ground (e.g. via soakaways and/or SUDS).**

“Soakaway drainage will not be utilised as the ground conditions are not amenable to this type of drainage. However, the existing site is covered with hardstanding, a portion of which will be converted to soft landscaping. A small increased volume of surface water is therefore expected to drain into the underlying Made Ground. Given the above, this issue is considered to be of neutral significance.”

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

“The construction of a basement can result in ground movements detrimental to the highway and any infrastructure contained therein. The utilities survey plan indicates that there are a number of utilities that run around the site boundary. However development proposals comprise only a limited deepening of the current basement level with the area of the basement being extended by 1.60m. Reference to CIRIA C580 [18] suggests that for an excavation up to 4m deep, ground movements in the order of about 15mm could be expected.”

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

“The depth of the basement and foundations to Troutbeck should be determined if it is decided to take this site for development. Dependent on the nature of the foundations to Troutbeck and the proposed retaining wall depth for the Cape of Good Hope site, there may be a need for underpinning. Once the proposals for this site have been developed it will be necessary to prepare a Ground Movement assessment and Construction Methodology to ensure that any damage to Troutbeck is within acceptable limits..”

“...detailed design of the basement would be necessary to ensure ground movements do not exceed acceptable limits.”

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: <ul style="list-style-type: none"> • 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 appears to meet the requirements.

Subterranean (groundwater) flow: The report appears to meet the requirements.

Land stability: The report appears to meet the requirements.

3.2.2 BIA Scope

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

The provided BIA scope appears 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?

A specific description of the works has yet to be developed. The method of construction is indicated to be likely to comprise a piled embedded, although it is also noted that there may be a need for underpinning.

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 on the adjacent foundations has yet been obtained and no ground movement assessment has yet been undertaken.

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.

3.2.6 Assessment Methodology

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

Not yet..

No ground movement assessment has yet been undertaken.

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)

A definitive construction methodology has yet to be developed.

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)

The need for monitoring has been recognised, but no details have yet been provided.

3.2.9 Residual Impacts after Mitigation

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

Not yet.

4. Assessment of Acceptability of Residual Impacts

4.1 Proposed Construction Methodology

A definitive construction methodology has yet to be developed.

4.2 Soundness of Evidence Presented

The BIA asserts the following *“Reference to CIRIA C580 suggests that for an excavation up to 4m deep, ground movements in the order of about 15mm could be expected.”* It is not clear how this figure has been obtained.

Table 3.6 of the BIA appears to contain incorrect information concerning nearby trees.

4.3 Reasonableness of Assessments

The assessments that have been made appear reasonable.

4.4 Robustness of Conclusions and Proposed Mitigation Measures

In the absence of a specific construction methodology and proposed mitigation an assessment for robustness cannot be made.

5. Conclusions

The submitted BIA does reflect the processes set out in DP27 and CPG4, but does not proceed to a definitive construction methodology and assessment of particular mitigation.

As a consequence it is unfortunately considered that the present submission does not demonstrate sufficient detail and certainty to ensure accordance with DP27, in respect of

- a. Maintaining the structural stability of the building and any neighbouring properties

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 regarding the location and form of the foundations of the neighbouring property
- A specific construction methodology indicating how the stability of the neighbouring structure is to be protected in both the temporary and the permanent situation.
- A ground movement assessment
- A monitoring and contingency plan

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.