

**Independent Review  
of  
Basement Impact Assessment for  
planning application 2014/5527/P  
at**

**Midland Crescent  
London  
NW3 6NA**

**for  
London Borough of Camden**

**LBH 4281**

**October 2014**

**LBH**  
**WEMBLEY**



**Geotechnical &  
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LBH 4281

Client: London Borough of Camden

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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 stepped building at this site that will include a basement that will extend two storeys below street level but not below the track level of the adjacent railways, which lie some 9m below street level.

## 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 Impact Assessment by Ramboll, dated 21st October 2014, Ref: 30030.E.BIA.4
2. Construction Environmental Management Plan Revision C by MAH, dated 11<sup>th</sup> August 2014
3. Planning Statement by Savills (UK), dated August 2014, unreferenced
4. Phase II Ground Contamination Report Midland Crescent by Capita Symonds, dated February 2012, Ref: CS/054209
5. Proposed Drawings by Ramboll, dated 20<sup>th</sup> August 2014, Refs: S/SK007 – 012, S/SK014 – 015, SSK05 and by CZWG dated 26<sup>th</sup> August 2014, Refs: 2004-00-DR-0601 to 2004-00-DR – 0604, 2004-00-DR-0401, 2004-00-DR-0402, 2004-00-DR-0404, 2004-00-DR-0405, 2004-00-DR-0108 to 2004-00-DR-0111

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

##### 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:

- **The existing site includes slopes, natural or manmade, greater than 7 degrees.**
- **London Clay is the shallowest strata at the site.**
- **The site is within an area of previously worked ground.**
- **The site is within 5m of a highway or pedestrian right of way.**

##### 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:

- **As part of the site drainage, surface water flows (e.g. rainfall and run-off) will be materially changed from the existing route.**

- **The proposed basement development will result in a change in the proportion of hard-surfaced/paved areas.**
- **The proposed basement will result in changes to the profile of the inflows (instantaneous and long-term) of surface-water being received by adjacent properties or downstream watercourses.**
- **The site is in an area known to be at risk from surface water flooding or is at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature**

### 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).

No checklists have been provided in the BIA and there is no 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 basement development will result in a change in the proportion of hard-surfaced/paved areas.**  
*The guidance advises that a change in the 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. 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 existing site includes slopes, natural or manmade, greater than 7 degrees.**  
*The guidance advises that there may be local slope instability within 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 an area of previously worked ground.**  
*The guidance advises that previously worked ground may be less homogenous than natural strata, and may include relatively uncontrolled backfill zones.*
- **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.*

- **As part of the site drainage, surface water flows (e.g. rainfall and run-off) will be materially changed from the existing route.**

*The guidance advises that basement development may increase the load on the sewer and drainage systems if it leads to increased occupancy of dwellings. In turn this may increase the risk of flooding should the sewer and drainage systems become overwhelmed. Constructing a basement, either beneath or adjacent to an existing building will typically remove the permeable shallow ground that previously occupied the site footprint. This reduces the capacity of the ground to allow rainfall to be stored in the ground (which in essence acts as a natural SUDS, or sustainable urban drainage system). This runoff must then be managed by other means (eg through construction of SUDS), to ensure that it doesn't impact on adjoining properties or downstream watercourses. For sites in the catchments of the pond chains the potential impacts listed above under (1) apply if the resulting changes in drainage affect the flow to the ponds.*

- **The proposed basement will result in changes to the profile of the inflows (instantaneous and long-term) of surface-water being received by adjacent properties or downstream watercourses.**

*The guidance advises that changes could result in decreased volume, which may affect ecosystems or reduce amenity, or increased flow which may additionally increase the risk of flooding.*

- **The site is in an area known to be at risk from surface water flooding or is at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature.**

*The guidance advises that a flood risk assessment should be undertaken.*

### 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).

Document 4 includes the report of a site investigation undertaken in January 2012 by Harrison Group, comprising four window sampler boreholes constructed to a maximum depth of 5m around the eastern end of the site. Standpipes were installed and groundwater monitoring was undertaken during the following two weeks.

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### 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 discussion of impacts. The report concludes that

*“... the proposed scheme will not have a significant impact on surface water flow and flooding, groundwater and slope stability that cannot be readily mitigated as part of the detailed design.”*

The following further comments are provided:

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

*“The site was historically drained when in use as a station, but the site has become derelict and overgrown. It is assumed that there is an existing connection to the public sewer to the west of the site. It is proposed to maintain this connection or provide a new connection to the Thames Water combined public sewer network if the existing connection is unusable. The proposed development will ensure that run off will be discharged into the public sewer.”*

*“As part of the proposed surface water drainage designs, surface water has been attenuated at 50% of the peak existing runoff rates. The proposed drainage strategy utilised green roofs across the roof to prevent the water from immediately flowing into the public sewer.”*

- **The existing site includes slopes, natural or manmade, greater than 7 degrees.**

*“The existing site levels will be reduced to that of the railway and hence removing this issue.”*

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

*“Long term ground movements from loading or unloading the clay will be designed for.”*

- **The site is within an area of previously worked ground.**

*“A site investigation will quantify the risk of encountering obstructions within the Made Ground. These will be removed and the final raft foundation will be constructed on the London Clay”*

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

*“The proposed foundation level will be approximately at railway level. The adjacent road bridge is founded at or below this level.”*

*“– undermining will not occur.”*

- **As part of the site drainage, surface water flows (e.g. rainfall and run-off) will be materially changed from the existing route.**

*“As part of the proposed surface water drainage designs, surface water has been attenuated at 50% of the peak existing runoff rates. Due to the ground conditions at the site and adjacent infrastructure, it is not possible to infiltrate water within the site boundary. Green roofs have been proposed throughout the scheme which will reduce the overall volume of water discharge from the site through evapotranspiration. Consequently, the overall water volume from the site will also be slightly reduced.”*

*“Both the volume and flow rate for the proposed development is proposed to be less than the existing case.”*

- **The proposed basement will result in changes to the profile of the inflows (instantaneous and long-term) of surface-water being received by adjacent properties or downstream watercourses.**

*“A flow control device, in the form of a hydrobrake is proposed to restrict flow to the public sewer. The proposed drainage scheme reduces the existing flow rates by 50% into the public sewer. A maximum flow of 30 l/s is permitted through the hydrobrake which will discharge surface water from the site over a longer time period.”*

- **The site in an area known to be at risk from surface water flooding or is at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature.**

*“..the site is not at risk from groundwater flooding.”*

*“..site drainage would be permitted to connect to the surrounding public sewers on the condition that the discharge rates were regulated to prevent flooding due to the public sewer network.”*

*“The basement level will be set above the predicted flood levels to prevent pluvial flooding estimated by both the EA and LBC.”*

### **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**

<b>Surface flow and flooding</b>	A Hydrologist or a Civil Engineer specialising in flood risk management and surface water drainage, with either: <ul style="list-style-type: none"> <li>• The “CEng” (Chartered Engineer) qualification from the Engineering Council; or a Member of the Institution of Civil Engineers (“MICE”); or</li> <li>• The “C.WEM” (Chartered Water and Environmental Manager) qualification from the Chartered Institution of Water and Environmental Management.</li> </ul>
<b>Subterranean (groundwater) flow</b>	A Hydrogeologist with the “CGeol” (Chartered Geologist) qualification from the Geological Society of London.
<b>Land stability</b>	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 meets the requirements.

**Subterranean (groundwater) flow:** The report meets the requirements.

**Land stability:** The report meets 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 it is considered that they have been identified in section 3.1.2 above.

### 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.

### 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.

Yes.

### 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).

Yes.

### **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.

### **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 is considered appropriate.

### **4.2 Soundness of Evidence Presented**

The evidence presented appears sound.

### **4.3 Reasonableness of Assessments**

The proposed assessments appear reasonable

### **4.4 Robustness of Conclusions and Proposed Mitigation Measures**

The conclusions and proposed mitigation measures appear to be robust.



## 5. Conclusions

The submitted BIA reflects the processes and procedures set out in DP27 and CPG4, and it is considered that the submission does demonstrate sufficient detail to 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
- c. Avoiding cumulative impacts on structural stability or the water environment.

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