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PROJECT:	No.14 Roger Street, LONDON, WC1N 2JR			
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### 1.0 Introduction

#### 1.1 Brief

Barrett Mahony Consulting Engineers (BMCE) has been commissioned by Marek Wojciechowski Architects to prepare a structural methodology and basement impact assessment report for the proposed development at 14 Roger Street. This document provides a description of how the proposed works will be achieved from a structural engineering perspective and describes the structural implications of the new area of basement with respect to Camden Borough Council's guidance document, CPG4, for basements and lightwells.

#### **1.2** General

The existing property at No.14 Roger Street, consists of a four storey masonry/concrete structure over an existing basement.

It is proposed to carry out a refurbishment of the property which includes returning the property to a residential usage from the current office use. The works also include construction of an small extension to the existing basement up to the wall of the adjacent property on Roger Street. It is also proposed to construct an addition storey at existing roof level.

### 2.0 Existing structure

#### 2.1 General

The existing structure at No.14 Roger Street is a five-storey property located at the junction of Roger Street and North Mews. There is a small yard space that separates the property from the adjacent building at 77 Grays Inn Road Roger and the rear wall is a shared party wall with No. 4 North Mews

#### 2.2 Existing building structural form

From our preliminary inspection, the existing building appears to be load bearing masonry with concrete floors and roof. The existing floor has some down-stand concrete beams and these, along with the slab, will need to be inspected for integrity and reinforcement content prior to completing the final design.

There is an existing basement which covers approximately 90% of the site with a small yard area to the north east that formed the boundary line with the adjacent properties. It is not know at this stage if the adjacent properties have basements.

From an internal and external visual inspection the structure appears in good condition with no visible evidence of cracking or distress.

#### 2.3 Site investigation

At this point no site investigation works have been commissioned. However based on local engineering knowledge, previous experience of the geology in this part of London and review of previous bore holes undertaken in the near vicinity, it is expected that the sub-soils comprise of a fill material over brown silty sandy Clay and terrace gravels overlying stiff London Clay at depth. Trial holes will be excavated, prior to commencement to confirm the ground conditions and the details of the existing footings.

## 3.0 Proposed development

#### 3.1 Basement

A new area of basement is to be formed below the existing yard space to the side of the property. The adjacent buildings on two sides of this yard are single storey. The yard space is quite restricted, subject to the results of trail pitting to expose the depth of the existing footings, it is proposed to utilise a traditional underpinning solution with mass concrete pins to form the new basement liner wall.

The new basement slab will consist of a 200mm thick concrete slab with edge thickenings on HD insulation on a minimum of 225mm of well compacted granular fill. The external yard area will be formed with a 150mm thick concrete slab on grade and the new basement walls will be in reinforced concrete.

The existing walls to the stair and lift cores will need to be demolished and the lift pit infilled with a new slab. The walls of the new stair core at ground level and above will be supported on a pair of perpendicular steel beams supported on a new steel column and foundation at basement level.

#### **3.2** Ground Floor Level

There is a new single story structure (entrance area/WC) to be constructed above of part of the new basement. This will be formed with block work walls built up from basement slab level and a concrete roof. A pair of new staircases are proposed to serve basement from ground floor level. The new openings that will be formed in the existing ground floor slab to accommodate this will be trimmed with new steel frames supported on new concrete footings at basement level.

The existing stair and lift core walls will need to be demolished and the voids infilled with a new concrete slab.

#### **3.3** First floor Level

There are a number of new internal partitions at first floor level. It is anticipated that these will be 100mm solid block partitions. As the original building use was as office space it is anticipated that the return to residential use will help to reduce the load on existing floors, walls and foundations. It is proposed to provide floor to ceiling height windows and as such the existing window cill levels will be reduced to floor level by saw cutting to achieve this. It may be necessary to provide new steel beam lintols above the windows to allow the windows to be extended up as close to the soffit of the existing slab as possible. (some further opening up works will be necessary to confirm this)

#### 3.4 Second Floor level

As first floor level described above..

#### **3.4** *Third floor*

Typically as described above with the addition of a new steel beam at the new stair location to allow the reduction in plan of the stair well at this floor level.

#### 3.5 Fourth Floor

It is proposed to construction an additional story at the existing roof level. The existing roof slab and roof lights will be removed and replaced with a new 150mm thick composite concrete/metal deck slab supported on new steel beams spanning the width of the building. This will provide a robust and light weight solution that will minimize additional loads to the existing walls and foundation

These steel beams will also provide support for some of the vertical structure and roof structure required to form the additional storey.

The existing parapet is to be raised up to act as a balustrade, this will be built in masonry and may require steel posts to provide lateral restraint at regular intervals.

#### **3.6** Roof

The new roof will be again be formed with a composite 150mm thick concrete/metal deck slab and will support the weight of a new sedum green roof and terrace above. Lateral stability of the frame will be achieved with portal frame action in the east –west direction and with vertical and horizontal steel x-bracing in the north-south direction.

#### 3.7 Lift shaft/stair infill-

The internal refurbishment requires that the existing lift shaft be infilled while the existing staircase needs to be removed and relocated to the rear of the property. In the case of the existing stair case, the void will be infilled with a concrete slab. The lift slab will be infilled in a similar manner at ground floor level while a new steel stair is formed in the area from first floor and above. As this new stair case does not serve basement level, the walls enclosing the stair core will need to be supported at each floor level by steel beams supported on a new steel column.

#### 3.7 Robustness and stability

The provision of the addition story to this building will make this a five story building over basement. The change of use is from office space to residential and as such this will be considered a material change of use. The new building will be considered as class 2B over ground floor level and will need both horizontal and vertical ties. Horizontal tying should be adequately achieved by the reinforcement within the existing floor slabs and beams (this will have to be checked) however it is likely that new vertical ties (in the form of steel rods/plates) will have to be retro fitted in the existing structure.

#### 4.0 Basement Impact Assessment

With reference to The Borough of Camden's Planning Guidance Document CPG 4:

### 4. Screening assessment for subterranean ground water flow:

- Q. Is the site located directly above an aquifer?
- A. **No**
- Q. Will the proposed basement extend beneath the water table surface?

#### A. No. (Very unlikely given the external ground levels)

Q. Is the site within 100m of a water course, well or potential spring line? A. **No**.

Q. Is the site within the catchment of the pond chains on Hampstead Heath? A. **No.** 

Q. Will the proposed basement development result in a change in the proportion of hard surfaced/paved areas?

A. No.

Q. As part of the site drainage will more surface water than at present be discharged to the ground?

A. No.

Q. Is the lowest point of the proposed excavation close to or lower than the mean water level in any local pond or spring line? A. **No.** 

### 4.2 Screening assessment for slope stability:

Q. Does the existing site include slopes, natural or manmade greater than 7 degrees? A. **No.** 

Q. Will the proposed re-profiling of landscaping of site change site slopes at the property boundary to more than 7 degrees

A. No.

Q. Does the development neighborhood land, including railway cuttings and the like, have a slope greater than 7 degrees?A. No.

Q. Is the site within a wider hillside setting in which the general slope is greater than 7 degrees?

A. No.

Q. Is there London clay in the shallowest strata at the site?

#### A. No. (Very unlikely given bore hole records in the vicinity)

Q. Will any tress be felled as part of the proposed developments and /or are there any works within any tree protection zones where tress are to be retained? A. No.

Q. Is there a history of seasonal shrink/swell subsidence in the local area and/or evidence of such effects on the site on the site?A. No.

Q. Is the site within 10m of a watercourse or potential spring line? A. **No.** 

Q. Is the site within the area of previously worked ground?

A. No.

Q. Is the site within an aquifer?

A. No.

Q. Is the site within 50m of the Hampstead Heath ponds?

A. No.

Q. Is the site within 5m of a highway or pedestrian right of way?

A. Yes.

Q. Will the proposed basement significantly increase the differential depth of foundations relative to neighboring properties?A. No.

- Q. Is the site located over any tunnels?
- A. No.

#### 4.3 Surface water flow screening assessment

Q. Is the site within the catchment of the pond chains on Hampstead Heath? A. **No.** 

Q. As part of the proposed site drainage will surface water flows be materially changed from the existing route?

A. No.

Q. Will the proposed basement result in a change in the proportion of hard surfaced/paved external areas?

A. No.

Q. Will the proposed basement result in changes to the profile of inflows of surface water being revived by adjacent or downstream watercourses?A. No.

Q. Will the basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?A. No.

### 4.4 Conclusion of screening assessment:

The responses to the questions are in the whole negative except with respect to the proximity to the adjacent pedestrian footpath and road.

With respect to this item; the adjacent buildings and boundary wall (to footpath) will be retained with a system of propped sheet piling/mini piles and as such the risk to public footpath/road will be minimal.

On the basis of this report and screening assessment we confirm that a full basement impact assessment is not required in this instance.

# Appendix 1: Preliminary Drawings









Appendix 2: Site Photographs

# Existing front entrance





Front Façade on Roger Street



Existing roof access ( to be demolished)



View along Roger Street with existing basement lights visible



Courtyard door and gable view of property.



View of existing courtyard and adjacent single story building



View of existing courtyard and existing property wall to rear.



Existing roof and roof lights



View of party wall to rear at parapet level..



Minor cracking above entrance at ground floor level.





# Ground floor slab with basement light



View of existing lift to be removed.



View of existing stair flight to be infilled.



View of existing roof structure to be removed.