TSConsulting Ltd

Consulting Structural Engineers

Structural Statement

Relating to a proposed basement construction

at

13/15 John's Mews, London, WC1N 2PA

Prepared by

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REPORT: **By: Trevor Scott**

Job name: 13/15 John's Mews, London, WC1N 2PA **Job no. 1420**

Structural Statement

1.0 Introduction

A comprehensive Basement Impact Assessment has been prepared by Chelmer Consultancy Services and reference has been made to the findings and recommendations contained therein for the design of the basement structure. The Chelmer Report, reference BIA/4507 Rev 1, is included elsewhere as part of the overall submission.

2.0 Site Investigation Findings

In broad terms the SI has revealed a significant depth, up to 5.9 metres, of made ground overlying the Weathered London Clay. Groundwater has been recorded within 3.27 metres of the existing internal floor level and specimens from both the Made Ground and the London Clay gave high sulphate contents.

An analysis of the impact of removing a significant depth of overburden from the Clay has revealed the potential for heave, both immediate and residual.

Providing also that the design of temporary lateral support to the basement excavation follows best practice it is not anticipated that bulk ground movements would exceed 5 mm in either the horizontal or vertical directions. Such movements might generate damage to adjacent properties that would be categorised as "negligible" (category 0) to "very slight" (Category 1) on the Burland Classification.

The SI does not recommend, owing to the inconsistency of the material, utilising the made ground as a bearing medium at depth but that, instead, the building should be supported on piled foundations taking support from the London Clay.

3.0 Basement Design

In the light of the findings from the SI report the basement will to be piled. An anticipated construction sequence is outlined on drawing 1420/03A whereby the perimeter walls will be constructed in a traditional "hit-and-miss" underpinning technique, prior to bulk excavation and their connection to the piled basement slab. The sequence defines the stages for the installation of temporary lateral support necessary to limit lateral movement of the pins as the excavation works progress. All such temporary works will be designed by the Contractor and submitted, together with detailed Method Statements, to the Engineer for review prior to the commencement of their installation.

The basement box, comprising the perimeter walls and the basement slab has been designed to accommodate the following, in addition to gravity loads:-

a) Lateral pressures due to retained earth together with water pressures that would result from a rise in water table to a depth of one metre from the top of the ground floor slab.
b) Flotation effects resulting from this water pressure.
c) The effects of potential heave, this to be limited by the introduction of a layer of Cellcore designed for the purpose.

The basement will be waterproofed internally using a Delta membrane or similar solution. All water will be directed to a sump in the basement slab for pumping to the main sewer in the street. It is anticipated that all superstructure foul and surface water drawing will be fed directly into the existing main sewers by gravity feed.

4.0 Party Wall Matters

4.1 The scope of works falls within the Party Wall Act 1996. Procedures under the Act will be dealt with by the client's Party Wall Surveyor and drawings, method statements and any other relevant information will be provided by the design team and contractor as appropriate to ensure that the interests of all relevant parties are protected.

4.2 Monitoring

It is proposed that the structural stability of the surrounding/adjacent properties is safeguarded by an approved system of 3D movement monitoring.

Monitoring stations will be established on the front and rear facades of 15 and 15 John's Mews, together with those of the immediate neighbours, at intervals not exceeding 3 metres. Monitoring will be undertaken by a specialist, independent company and forwarded to the Engineer in both graphical and numerical form within 24 hours of being recorded, except for any anomalous or excessive movement which is to be reported immediately. The following monitoring schedule is anticipated.

• Before any works commence (base reading)
• Weekly during the period of basement excavation/construction
• Monthly during the course of the remainder of the works.
• Six months after the completion of all construction works.

The following trigger levels for movement are proposed for agreement. In the event of a trigger value being reached the Contractor will immediately stop any work that might cause further movement, assess the situation and propose alternative methods for proceeding, with definitive further movement limits for those later steps.

a) Facades and Party Walls Horizontal and Vertical Movement
Amber +/-6 mm. All parties notified.
Red +/-8 mm. Works reviewed

5.0 Summary

5.1 The existing information and assessments suggests that, subject to supplementary investigations and detailed design, the proposed basement at 13/15 John's Mews should not:

- cause harm to the built and natural environment and local amenity;
- result in flooding; or
- lead to ground instability.

5.2 A comprehensive Site Investigation has provided sufficient information for the detailed design of the basement box and its piled foundations, together with recommendations to enable the correct specification of the concrete mix. One residual unknown has been highlighted (item 10.1.3 of the Chelmer Report) namely the location of a possible

Government communication tunnel. Further investigations will be undertaken to establish its proximity.

5.2 The proposed basement at 13 to 15 John's Mews has been designed with robust structural principles and methods of construction that are commonly used and well known in the industry. This will ensure the integrity of neighbouring structures and roadways are not compromised during the works.

This assumed Method Statement and Structural report has been completed by Trevor Scott MSc, BSc (Hons), CEng, MIStructE, who is the Managing Director of TSConsulting Ltd.

The following drawings and supporting calculations are appended to this report in support of the application.

Drawings: - 1420/01 – Proposed ground floor plan

1420/02A – Proposed basement plan

1420/03A – Construction Sequence.

Structural calculations for the permanent works.

p p TSConsulting Ltd

Trevor Scott
Managing Director