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Our ref J14349/MC/2

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Dear Gideon

**Re: AUDIT OF BASEMENT IMPACT ASSESSMENT FOR 13/15 JOHN'S MEWS
WC1N 2PA (2014/3330/P)**

Further to your instruction, we have now completed our review of the revised Basement Impact Assessment (BIA) relating to basement construction at the above site and this letter forms our report on the review. It should be read in conjunction with our letter J4349/MC/1 of December 2014.

1.0 INTRODUCTION

1.1 Brief

Geotechnical and Environmental Associates Limited (GEA) has been instructed by London Borough of Camden (LBC) to undertake an independent audit of a BIA for the above site and an assessment of the completeness of the submission in satisfying the requirements of Camden Planning Guidance 4.

Specifically LBC has requested that GEA provide an opinion on whether:

1. *The submission contains a Basement Impact Assessment, which has been prepared in accordance with the processes and procedures set out in Camden Planning Guidance 4 (2013).*
2. *The methodologies have been appropriate to the scale of the proposals and the nature of the site.*
3. *The conclusions have been arrived at based on all necessary and reasonable evidence and considerations, in a reliable, transparent manner, by suitably qualified professionals, with sufficient attention paid to risk assessment and use of conservative engineering values/estimates.*
4. *The conclusions are sufficiently robust and accurate and are accompanied by sufficiently detailed amelioration/mitigation measures to ensure that the grant of planning permission would accord with DP27, in respect of*
 - 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.*

In addition, LBC specify the following requirements of the assessor because of criticisms and concerns raised by neighbours in respect of this proposal and another close by:

5. *Raise any reasonable concerns about the technical content or considerations of the submission which should be addressed by the applicant by way of further submission, prior to planning permission being granted. In this case it would need to be apparent that the submission so deficient in some respect that the three conclusions (points 4a-c above) cannot be guaranteed without further information at this stage. Please clearly denote the precise information (if any) that would be required to satisfy 4a-c.*
6. *Raise any relevant and reasonable considerations in respect of the structural integrity or condition of the neighbouring properties which may be unknown or unaccounted for by the submission or which would benefit from particular construction measures or methodologies in respect of the development following a grant of permission for the development. Please clearly denote what such conditions should entail.*

1.2 Proposed Development

The site is located on the eastern side of John's Mews roughly mid-way between Northington Street and Roger Street. The proposed development comprises the residential conversion of two adjoining and currently connected former mews houses that have most recently been in commercial / light industrial use. The existing structures comprise two-storey buildings that front onto John's Mews with a ground floor extension to the rear that covers the entire site area. The proposed conversion includes the excavation of a single-storey basement beneath the footprint of the current buildings along with the addition of accommodation within a new mansard roof. Conventional reinforced concrete underpinning is proposed for the support of the existing buildings and the terraced buildings on both sides as well as forming the retaining walls for the excavation.

1.3 Documentation

The previous BIA was prepared by Chelmer Consultancy Services (CCS), referenced BIA/4507 Rev 1 Basement Impact Assessment at 13/15 John's Mews, London WC1N 2PA for JM13 Limited, and dated September 2014. It included a ground investigation undertaken by Chelmer Site Investigations (CSI), referenced 4507 between May 2014 and August 2014 and structural calculations by Trevor Scott 1420 and dated May 2014.

This further review has been based on a revised issue of the BIA along with updated drawings and a slight change in the scheme proposed. The revised CCS BIA is referenced BIA/4507 Rev 2 Basement Impact Assessment at 13/15 John's Mews, London WC1N 2PA for Wansworth (sic) Sand and Stone Limited, and dated March 2015. It includes a ground investigation undertaken by Chelmer Site Investigations (CSI), referenced 4507, between May 2014 and August 2014 and structural calculations by Trevor Scott 1420 and dated May 2014 and structural stamen dated September 2014.

2.0 AUDIT OF THE REVISED BASEMENT IMPACT ASSESSMENT

2.1 Introduction

Those matters that were previously deemed acceptable have not been repeated herein and the notes below may be referenced against the shortcomings raised in our previous letter.

2.2 Development Proposals

The scope of the development proposal is essentially unchanged from the previous submission but the means of support of the basement works has been changed from a ground-bearing slab to a piled basement slab. The party walls remain, however as underpins.

2.3 Basement Impact Assessment

The previous GEA review found that the Basement Impact Assessment, when read in conjunction with the architect's drawings and Scott calculations, was a relatively thorough assessment of the impact of its construction. However the following concerns were noted in the summary.

It is considered that the proposed development poses more risks than most due to the thickness of the made ground and its inherent variability. These risks and their potential impacts are considered to have been met to a degree but further investigation and revision of the BIA is needed before the requirements of CPG4 can be considered to have been met.

Further consideration of the cumulative groundwater impact and the final foundation arrangements is required. It is accepted that these will most likely be finalised when the project reaches the detailed design stage. As such, these may be conditioned on a planning approval or dealt with as part of the Party Wall agreement process and not necessarily by reissue of an updated BIA.

2.3.1 Groundwater

Despite the recommendations made by Chelmer and by GEA, no groundwater monitoring has been undertaken since August 2014 through the wetter seasons. The uncertainty about the groundwater conditions therefore remains. As previously noted, however, if the measures recommended by Chelmer in Section 10.2 and 10.3 in the BIA are adopted then it is considered that the effects of groundwater flow will have been appropriately mitigated.

2.3.2 Ground Stability

No further ground investigation has been undertaken since the previous BIA and therefore all concerns remain that relate to the lack of adequate information in respect of the walls that need underpinning.

A construction sequence has now been provided in Trevor Scott Drawing No 1420 03A which has been updated in line with the Chelmer recommendations. The revised methodology proposes to support the new basement slab on piles which provides better long term stability for 15 / 17 John's Mews as well as the adjacent properties.

The proposal to found the underpins in made ground remains a fundamental concern and, as the extract from our previous review stated: The current (preliminary) calculations predict damage within Burland 'Category 1 – very slight' although only just above the threshold for 'Category 0 – negligible'. These are based on a 'rule of thumb' that typically ground movements due to underpinning of foundations will be less than 5 mm. However that is based on the underpins extending to bear upon or within a competent stratum; if bearing within made ground these movements could conceivably be greater and the damage category higher. The made ground at this site is clearly variable in composition and its nature at depth has only been determined by a single borehole. For the foundations to bear within the made ground or in the first instance, for underpins to be formed within it, the risk to surrounding properties is considered to be relatively high.

Chelmer provide a number of measures in Section 10.4, that if followed fully, should be sufficient to control movements. Permeation grouting to help stabilise the made ground around the excavation and the importance of supported faces of underpins are stressed in Section 10.4.4 of the BIA and in a number of places, reference is made to best practice during design and construction and the need is stated for further investigation.

This section of the BIA is considered to be a thorough assessment of the potential stability

aspects of the proposed basement. The BIA makes it plain that there remain concerns about the construction and recommends a strict regime of monitoring, mitigation measures to control movement and identifies the areas and processes that will be most important to control. However further ground investigation is stated as being necessary before the ground stability impacts can be fully assessed and therefore before the requirements of CPG4 can be met.

Further investigation has, however, not been carried out and therefore the revised BIA is no further on in confirming mitigation measures. It is assumed therefore that further investigation, detailed design and updated methodology would be attached as conditions to the planning consent.

3.0 SUMMARY

Our review has found that the revised Basement Impact Assessment, when read in conjunction with the architect's drawings and Scott calculations, is a relatively thorough assessment of the impact of its construction but provides very little further information than the previous one and the points raised in the summary of our previous review letter remain relevant.

From the additional information provided and in accordance with Points 5 and 6 in Section 1.1 above, it is considered that the methodology proposed does not provide sufficient confidence in the protection provided to the surrounding structures. Notwithstanding the need for development of design and the installation of monitoring points, it is considered that the piles should be installed prior to the underpinning taking place. Transfer beams should then be installed such that the loads from the underpinned walls can be transferred into the underlying soils through those piles. It is acknowledged that this will be challenging in both design and construction and it remains for the LBC planning officers to decide whether the redesign imposed as a planning condition or held as a reason for refusal.

We trust that the foregoing comments are sufficient for your needs and we would be pleased to discuss the findings in more detail if required and to provide any additional assistance that may be necessary.

Yours sincerely

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