Stand Consulting Engineers

No.46 Inverness Street - Basement Impact Assessment Response to Campbell Reith Comments

Introduction

We were appointed by the owners of No.46 Inverness Street to provide structural engineering input in relation to the proposal to form a residential dwelling on the site with a new single storey basement.

The site is within the London Borough of Camden. As part of Camden's planning policy they require a Basement Impact Assessment (BIA) to be undertaken for every new sub-terrain development. The purpose of the BIA is to determine the possible impacts on the baseline attributes of the geological, hydrogeological and hydrological on the site. Steps to mitigate identified impacts are to be implemented in the design process and outlined in the BIA.

We prepared the BIA for the site in November 2018 and the full planning application was registered by Camden on 29 October 2019. On 18 December 2019 we responded to items in Camden's Basement Impact Assessment Audit. Campbell Reith, an independent BIA auditor employed by Camden, reviewed the BIA and raised the follow questions and comments on the BIA in their audit report dated March 2020:

Questions & Comments:

1). Undrained shear strength for the London Clay should be presented in the BIA and allowable bearing capacity should be assessed.

2). The software input and output used in the Ground Movement Assessment are required to check the analysis assumptions

3). The methodology for installing sheet piling should be clarified. Further impact assessment should be presented, as required (e.g. impact of vibration; review of GMA considering embedment of sheet piles).

4). A Flood Risk Assessment is required as specified in the BIA.

This note has been prepared in response to the questions and comments raised by Campbell Reith.

Responses to Campbell Reith's BIA Audit Questions:

1) The undrained shear strength for the London Clay, along with the allowable bearing capacity are provided in Southern Testing's Interpretive Site Investigation Report dated 17th March 2020. In Section 10 of Southern Testing's report they note the risk of heave and suggest the introduction of a buffer material. In section 5.1 of the BIA, it is noted that the overall weight of the new structure is greater than the weight of soil removed, thus the site will only experience initial heave during the construction phase. The movements associated with this are covered in the ground movement assessment.

2) The software input and output used in the Ground Movement Assessment are included as an Addendum to Southern Testing's Interpretive Site investigation report dated 17th March 2020. They include the input and output for both the long and short term movement assessments. The risk of ground movement associated with the installation of the temporary sheet piles will be re-reviewed once we have received the contractor's proposals for the installation of these. As noted in 3) below, a specification outlining that their proposal must ensure ground movements stay within the bounds outlined by Camden will be included within the tender documentation.

3) The sheet piles are to provide temporary support during the construction of the basement and will, therefore, be designed by the contractor. We shall prepare a contractor's constraints performance specification which will include a clause that sheet piles are to be installed using a vibration-less hydraulic jacking system to minimise the risk of ground-borne vibration which could otherwise lead to disturbance and structural damage to the adjacent buildings.

   We shall also set out the requirements the contractor must take during the installation sequence to mitigate the risk of vibration and ground movements. These include ensuring the contactor installs a stiff propping regime to limit lateral deflection at the head and mid-height of the sheet pile wall, and checking the piles are free of damage or distortion prior to installation. We shall also require that the contractor submits drawings and calculations for our comment before the works commence.

   We have employed the specification and methodology proposed above previously in a number of locations and in each case the monitored ground movements have been less than predicted by the ground movement assessment.

   A contractor's constraints specification has been developed to set out the requirements the contractor must take during the installation sequence to mitigate the risk of vibration and ground movements further. These include ensuring the contactor installs a stiff propping regime to limit lateral deflection at the head and mid height of the sheet pile wall, and checking the piles are free of damage or distortion prior to installation. We have employed the specification and methodology proposed above previously in a number of locations and in each case

the monitored ground movements have been less than predicted by the ground movement assessment.

4) A Flood Risk Assessment has been carried out Tully De'Ath Consultants and is set out in their note dated 3rd April 2020. They conclude, "…the site appears to be at a low risk of flooding."