# TECHNICAL MEMORANDUM

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| **CLIENT** | SIMPLE WORKS | **CLIENT CONTACT:** | PHIL ISSACS |
| **DATE** | 05/01/2024 | **PREPARED BY:** | MARK HAWKINS |
| | | **CHECKED AND APPROVED BY** | EBENEZER ADENMOSUN |
| **DOC REF** | 2023-002-SIM-RAL Rev0 TM001 | | |
| **PROJECT NAME** | 31 DALEHAM GARDENS – BASEMENT IMPACT ASSESSMENT | | |
| **TITLE** | RESPONSES TO CAMPBELL REITH AUDIT QUERIES/COMMENTS | | |

## PREAMBLE

This note comprises a review of the available information from a variety of sources, together with (where appropriate) meetings and discussions with relevant authorities and other interested parties. The information reviewed should not be considered exhaustive and has been accepted in good faith by Geofirma Limited as providing a true description of site conditions and the proposed scheme. However, no liability can be accepted for the detailed accuracy or otherwise of any of the reports or documents prepared by others for the Client or for third parties, or for any associated errors or omissions.

The liability of Geofirma Ltd in respect of the information contained in the report/memorandum will not extend to any third party.

## 1 INTRODUCTION

Geofirma Ltd was been appointed by Simple Works (Client) to undertake a Basement Impact Assessment (BIA) for 31 Daleham Gardens, NW3 5BU in the London Borough of Camden. Subsequently Geofirma issued the BIA report on the 28th of April 2023, with the BIA report also providing a Ground Movement Assessment report completed and previously issued by Geofirma on the 24th of April 2023.

In summary the BIA report provided by Geofirma concluded that the risks associated with the development were minimal. In summary the potential for Damage Impact to surrounding structures within the zone of influence had a Category of Damage (Burland Scale) of 0.

This Damage Impact and lateral wall movement accounts for the proposed basement excavation being undertaken in a competent way, with the boundary wall temporarily restrained as shown on sketch 1803-XX-SK-05 provided in the BIA report.

Campbell Reith were appointed by the London Borough of Camden to undertake an audit on the Geofirma BIA report which was submitted as part of the Planning Submission documentation for 31 Daleham Gardens (planning reference 2023/4241/P). It is understood that the proposed basement development is considered to fall within Category B as defined by the Terms of Reference.

Campbell Reith issued their BIA Audit report for 31 Daleham Gardens on the 23rd of November 2023 (Campbell Reith Ref: NSkb14006-37- 231123-31 Daleham Gardens-D1) which provided queries relating to the Geofirma BIA and Ground Movement Assessment reports. This Technical Memorandum provides the Campbell Reith queries documented in their Audit report and the associated responses from Geofirma under Heading 2 of this Technical Memorandum.

A meeting between Campbell Reith and Geofirma was held on Thursday 22nd December 2023 where the Audit queries and appropriate responses were discussed. Those in attendance were Nicola Simonini of Campbell Reith along with Ebenezer Adenmosun and Mark Hawkins of Geofirma.

The document has been written by Mark Hawkins BSc MSc CGeol FGS and checked and approved by Ebenezer Adenmosun BEng ACGI MSc DIC CEng MICE FGS and a Registered Ground Engineering (RoGEP) Adviser.

## 2 Basement Impact Assessment - Audit Queries & Responses

The queries provided in the Campbell Reith Audit report are listed below and in total there were five queries which required a response. The queries were provided in Appendix 2 of the Audit report, which contains an Audit Query Tracker table. A response from Geofirma is provided for each query in Table 1 below.

**Table 1 – Queries & Responses for Daleham Gardens BIA**

| Query No | Subject | Campbell Reith Query | Geofirma Response |
|---|---|---|---|
| 1 | Hydrogeology | As the proposed sheet piled wall can deviate local spring lines, The BIA should assess the impact to the wider hydrogeological environment. | It is acknowledged that the sheet piled wall could intercept spring lines. It is considered that local groundwater will flow around the outside of the sheet piled wall as the sheet piles shall form a near impervious boundary and not have a significant impact on the wider hydrogeological environment. |

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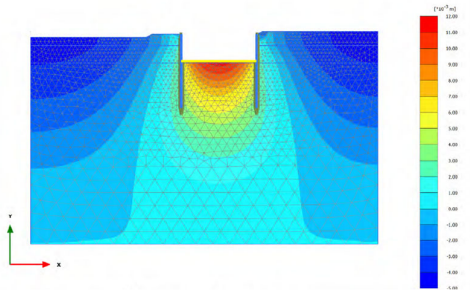
| 2 | Land Stability | Clarification on whether ground movements due to sheet piles installation are considered in the determination of the category of damage for neighbouring buildings is required. | The ground movement assessment completed by Geofirma accounts for the sheet pile installation. This has been included in the Plaxis staged construction analysis. |

| **Query No** | **Subject** | **Campbell Reith Query** | **Geofirma Response** |
|---|---|---|---|
| 3 | Land Stability | A brief method statement for the sheet piled wall installation should be presented to demonstrate no additional ground movements will be caused by installation operations and vibrations.<br><br>Consideration of the ground movements caused by other sheet pile section types is requested, to show that the 'worst case' scenario is presented in the BIA. | As this is at planning stage then it is recommended by Geofirma that the contractor consider a sheet piling method such as pre-boring of the ground and push press installation to limited vibrations and ground movements. This will be incorporated into the RAMS, which will be prepared by the sheet piling subcontractor during the detailed design and pre-construction stage.<br><br>We have assumed a robust AZ32 sheet pile section will be installed. It is highly unlikely a larger section than this will be used. The installation effect of this wall has been taken into account in the GMA as the assessment installation of a heavier sheet pile might result in high vibrations and increased ground movements if a drop hammer or vibration driving method are used. |

**Table 1 (continued)– Queries & Responses for Daleham Gardens BIA**

| Query No | Subject | Campbell Reith Query | Geofirma Response |
|---|---|---|---|
| 4 | Land Stability | The GMA should consider the potential for excavation below proposed formation level due to the presence of localised deep Made Ground. | The Geofirma BIA analysis has accounted for an embedded cantilever sheet piled wall to support the excavation down to the proposed formation level. The toe level for the sheet pile has been modelled in the GMA as penetrating a considerable depth into the Claygate/London Clay, which is below the base of the Made Ground determined during the ground investigation (see figure below)<br><br>Geofirma recommend that if excavation below the proposed formation level is required, due to the presence of localised deep Made Ground, then wall support methods such as propping with waler beams or buttress walls can be considered during the detailed design stage<br><br>It is recommended that the sheet piled wall have a sensitivity check where the wall deflection, ground movement and damage risk is assessed for each support method analysed.<br><br>  |
| 5 | Land Stability | An impact assessment due to tree removal should be presented for neighbouring | A arboricultultural report was prepared by Sharon Hosegood Associates for the project. The tree |

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| | | properties No. 31a and 33a Daleham Gardens. | mentioned as being present within the site boundary are Cherry, Goat Willow, Holly, Elder, Magnolia and Sycamore, which are generally low to moderate water demand species. The recommendation in the report state the onsite trees are unlikely to pose a risk to adjacent sites because the boundary walls surrounding the site act as a root barrier, as proven by pits excavated during the arboriculturists site visit.<br><br>It should also be worth mentioning that the site was cleared of the majority of the trees in October 2021 during the site demolition, following the Arboriculturist visit. This was two years ago, hence some of the impact on any neighbouring properties should have been displayed, and none has been reported, or noted on the neighbouring properties<br><br>The only trees which seem to have been left in place are 3No on the western boundary, and these trees are a considerable distance from buildings fronting on to Fitzjohns Avenue. Based on the above, the impact of the removal of the trees at this site has and will be very low to negligible on the neighbouring properties. |

## 3 CONCLUSION

Following the meeting between Campbell Reith and Geofirma and our provided responses to the Audit queries in this Technical Memorandum, Geofirma are of the opinion that our responses are sufficient to close the Audit queries.

Geofirma acknowledge that Query number 6 provided in the Campbell Reith Query Tracker Table was a note only and no response was required. Query number 6 related to 'the BIA

recommending further site investigation and groundwater monitoring to be undertaken to refine ground model and to inform detailed structural and temporary works design' at the next stage.

On acceptance of our responses this should allow for Approval of the Basement Impact Assessment reports that have been issued.

If Campbell Reith have any questions relating to this Technical Memorandum and the provided responses to the Audit queries, then please contact Geofirma.