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Hugh Miller
Development Management Planning Services
London Borough of Camden
Town Hall
Argyle Street
London
WC1 8ND

Your ref: 2013/6418/P

Our ref: IMM/CG/08273A

Dear Hugh

Independent review of Basement Impact Assessment for planning application 2013/6418/P at Ground floor flat; 26 Wedderburn Road, London, NW3 5QG

This letter report outlines an independent geotechnical review of the submitted planning documents relating to the above development. It follows a review of a previous submission for works at the site under planning reference 2012/2968/P, which was assessed by CGL within the letter submitted London Borough of Camden, dated 20 May 2013. It is noted that some of the development proposals referred to in the previous application have been consented on appeal, namely construction of a single storey ground floor rear extension and conservatory, a single storey ground floor side extension and creation of a rear light well. This new application (details of which are set out below) has been submitted to gain consent for works to the existing basement at the property. The review has been requested by London Borough of Camden following receipt of objections relating to the content and thoroughness of the Basement Impact Assessment (BIA) undertaken by Engenuiti in support of the current application.

The following documents have been received to inform this review:

1. Engenuiti (August 2012) *26 Wedderburn Road – Basement Impact Assessment*. Document ref. 148-S-REP-003. Rev.00 27/09/13
2. Letter from Tim McFarlane of Glass (28 October 2013). *Re Proposed Basement Works 26A Wedderburn Road, NW3 Application 2013/6418/p (on behalf of Co-freeholders and the residents of the building).*

It is noted that the general scale of the subterranean development is relatively small, with one isolated single level excavation for a laundry room, together with an increase in the headroom within the existing basement facilitated by underpinning the existing walls and reducing the basement slab level. In this regard, structural drawings within the BIA indicate that typical basement walls will be underpinned by circa 600mm, with an excavation of approximately 1m below the existing basement floor level.

An independent review of the documents submitted has been undertaken in order to address the 6 key issues that are set out in the quotation letter from London Borough of Camden. The 6 issues upon which London Borough of Camden require responses in order to make a recommendation for approval to members are set out in italics in the following text, followed by the CGL response.

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.*

CPG 4 requires Basement Impact Assessments to be issued in four stages; CGL has assessed the documents provided against the requirements for each stage in CPG4.

Screening: The Engenuiti Report provides screening flowcharts as set out in CPG4 and provides adequate reasoning of what further information is required as part of the site investigation. Where no further information is required suitable justification has been provided. Reference is made to the guidance and relevant figures from the Arup Report are provided in Appendix A and B of the BIA.

Scoping: The scoping process requires the potential impacts of the basement to be identified, as based on the screening process. Although no specific scoping 'chapter' has been set out within the BIA, the key issues with this basement have been correctly identified within the assessment chapters 7, 8 and 9. Notably these include the potential impact on groundwater flow due to the slightly increased depth of basement, the potential for foundation settlement resulting from conventional groundwater control and loss of fines (i.e. running sand type conditions) and settlement due to the underpinning and excavation activities.

Investigation: The site investigation data and interpretative report provided by GEA and appended to the BIA provides comparable information to that set out in Appendix G of the Arup report. The site investigation provides detailed engineering logs in three locations external to the basement, enabling an assessment of groundwater flow and flow direction and an assessment of geological conditions across the development site. The investigation also incorporated groundwater monitoring, rising head tests and geotechnical laboratory testing. This scale of investigation is considered adequate in light of the scale of the development to support a BIA.

Impact Assessment: The two primary impacts of the basement are its effect on groundwater flow and its effect on neighbouring properties above and adjacent to, the development.

Groundwater flow: The issue of groundwater flow and potential threat on stability of the existing foundations during underpinning is a critical one and one that has been raised in the objections. The proposed method of construction is set out in the Construction Method Statement forming Appendix I of the BIA, and comprises a grouted cut-off wall, which is a well established groundwater control technique but requires a high level of expertise. Such a method is ideal where conditions of groundwater flow and loss of fines may be encountered during excavation beneath the existing foundations. It is noted that the inclusion of the detailed method statement addresses one of the CGL recommendations contained within the latter dated 20 May 2013 relating to the earlier application.

Effect on neighbouring properties: In this connection 'neighbouring properties' include the overlying flats and adjacent houses. The impact of the new basement construction and potential for settlement has been addressed by the settlement calculation contained within Appendix H of the BIA report. It is noted that the results of the settlement calculations have been compared to the Burland method and are categorised as negligible to very slight. This is consistent with the expectation in the CGL letter of 20 May 2013 and addresses the recommendation that settlement calculations be provided to London Borough of Camden.

It is noted that the eastern wall of the basement is located very close to the foundations of 24 Wedderburn Road, and that the depth of the footings to the adjacent property is unknown. The

limited length (3m to 4m) of underpinning in this area will be founded beneath the level of the foundations to that property, and it will be necessary to determine the depth of the foundations in order to assess whether any loads that may be imparted onto the basement wall to No 26 are significant.

Conclusion: It is considered that parts 1 – 3 of the BIA have been provided appropriately and in accordance with CPG4.

Part 4 requires a determination of the depth of the foundations to the adjacent 24 Wedderburn Road to finalise the assessment of any loading on the eastern basement wall. It is noted that this is recognised on the proposed basement section drawings, with a note stating *depth of existing footings TBC*. On the assumption that the foundations to No 24 are of similar depth to No 26, it is considered that the loads imparted onto the underpinned wall to No 26 are unlikely to be significant.

2. *The methodologies have been appropriate to the scale of the proposals and the nature of the site*

   The methodologies and site investigation have been appropriate to the scale of the proposals and the nature of the site. Although the general scale of the development site is limited to relatively small scale underpinning, some analysis work should be incorporated to estimate ground movement and the effect this may have on neighbouring properties.

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*

   It is considered that conclusions regarding groundwater flow and surface water flow and flooding have been appropriately arrived at and reflect conditions and risks on the site. In tis regard it is noted that the letter of objection from the Heath and Hampstead Society disputes the issue of flooding set out in the BIA. A comment in this regard is made in 4(b) below.

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*

      See comments above (QU 1).

   b. *avoiding adversely affecting drainage and run-off or causing other damage to the water environment and*

      It is noted that the drainage is to be replaced prior to construction of the basement. The extension of the basement slab by 600mm will have a negligible impact on surface waters or groundwater and is not considered to give rise to any damming of groundwater leading to any flooding from this cause.

   c. *avoiding cumulative impacts on structural stability or the water environment in the local area*

      See comments above (QU 1)

We are looking for a third party independent assessment because of criticism made by the report and critique submitted by the Co-Freeholders who are also residents of the host building and local society. Therefore your report also needs to comment on whether this report:

5. *Raises 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 is so deficient in some respect that the three conclusions (points 4a-c above) cannot be guaranteed without the provision of further information at this stage. Please clearly denote the precise information (if any) that would be required to satisfy 4a-c.*

   We have reviewed the letter submitted by Tim McFarlane of Glass, subsequent to undertaking our own independent review, the conclusions of which are set out in previous sections. There are some points where we agree that additional information should be provided by the applicant as follows.

   There is an inconsistency between the statement in the BIA in respect of retaining wall design (paragraph 4 of Section 6.5) that 'the wall is analysed on the basis of active pressures in accordance with BS EN 1997-1 and *includes an allowance for water pressure equivalent to 1.0m below ground*', and the head of water used in the calculations for heave (sheet F4) and lateral earth pressure (sheet F5). It is noted that the GEA report makes this water level recommendation (Section 7.1.2 of the GEA report) but notes that this may be reviewed *following additional investigation by means of trial excavations and further monitoring and the advice in BS8102:2009 should be followed in this respec*t. It is noted that a trial pit was excavated after the GEA report had been produced. The issue of design water levels will need clarification by applicant.

   It is noted that the permeation grouting is to be undertaken through the existing foundations to form a cut-off to groundwater prior to any underpinning. As stated above, it is considered that this approach is appropriate, and it is further noted that a programme of movement monitoring and groundwater level confirmation is to be undertaken during the works as set out in the Construction Method Statement to confirm the efficacy of the grouting and to monitor any movement. It is not stated explicitly however whether the grouting is to be continued along the line of the new 'North/South' wall to the proposed laundry room, or how the wall is to be formed into the 35^{o} battered section described in the BIA. This will need clarification by applicant.

   It is noted that an issue relating to the capacity of the brickwork within the basement walls to resist the short term earth and water pressures prior to construction of the basement slab has been raised by Tim McFarlane. This is a structural issue and as such not within the remit of this geotechnical review, although London Borough of Camden may wish for information from the applicant in this regard.

6. *Raises any relevant and reasonable considerations in respect of the structural integrity or condition of the road and 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.*

   The construction of the new basement will cause some limited ground movements. With good construction control and practices, and based on the relative scale of the development and the structural scheme outlined in the BIA, these movements should be manageable and not cause

unacceptable damage to neighbouring properties. This information can then be used in combination with the monitoring regime to control and understand movements as they develop during construction.

Typically this information has fallen within the remit of the party wall engineer under party wall awards and it is not the position of CGL to state whether it should be duplicated within planning conditions.

The commentary provided above represents our professional, independent opinion of the data provided and provides recommendations with regard to additional information required prior to submitting the application. We trust this assists and are available to contact should you have any further questions or comments.

Yours sincerely,

Ian Marychurch, Director
Card Geotechnics Limited