

8 August 2013

Mr Charles Thuaire  
Development Management Planning Services  
London Borough of Camden  
Town Hall  
Argyle Street  
London  
WC1 8ND

Your ref: 2012/3089/P

Our ref: IMM//CG/08215(1)

Dear Mr Thuaire

**Request for quotation in respect of independent assessment of basement excavation justification for revised planning application 2012/3039/P at 29 New End, London NW3 1JD**

Thank you for your emails of 9 July 2013 containing further information in respect of the Basement Impact Assessment of the proposed development upon which I previously commented in my report sent to you on 21 December 2013, and your instruction of 25 July 2013. I can confirm that I have reviewed the additional information sent through, in conjunction with the previous information as appropriate, and set out further comments on the information supplied in the following paragraphs, which should read as an addendum to my earlier report.

**Information provided**

The following additional information has been made available for review.

- Addendum to the Basement Impact Assessment: 29 New End, London NW3 1JD, by Taylor Whalley Spyra, April 2013. Includes:
  - Addendum to Report on Potential Effects of Construction: 29 New End, by Geotechnical Consulting Group, April 2013. Appendix A to TWS report.
  - Party Wall Drawings, Construction Sequence of Works, Construction Management Plan. Appendix B to TWS report.
- Letter from Arup to Camden Planning Department, dated 3 May 2013, reference 218555.
- KSR Architects Layout and Elevation Drawings. NEN-PL series, 2013.
- Letter from Stark Associates, to redacted recipient, dated 27 June 2013, reference New End/sk.
- Schedule of 'Comments on Reports (Rev A)', compiled by Stark Associates.

**The Brief**

In accordance with the instruction from Camden Council, my consideration of the further information is limited to issues associated with groundwater only. Dr Adam Pellew of RKD Consultant Ltd has been appointed to review the documentation from the remaining elements required under Camden Council's planning guidance document CPG4.

**Comments on the information provided**

The information provided in the Taylor Whalley Spyra (TWS) addendum BIA (including the Geotechnical Consulting Group (GCG) addendum report), comments exclusively on the realignment of the proposed western basement wall and the impact of this on the buttresses to the adjacent boundary wall. Other than the

realignment of the wall, there is no change to the proposed structure that has a material impact on the groundwater. On this basis I have not made comment on the TWS report and its appendices.

Similarly, the Arup letter also addresses the issues associated with the realignment and buttresses, and makes no further comment on the impact on groundwater.

The information provided in the letter from Stark Associates (the Neighbours' Consultant) and the accompanying schedule does make some comments that have implications in respect of groundwater issues. The comments are addressed in the following section.

### Comments on Stark Associates' Letter and Schedule

Each of the comments made on the Stark Associates' Schedule that relate to groundwater has been included in the table below. The comments made by the Neighbours' previous consultants (Mr Eldred and Dr de Freitas) in respect of the Developer's Basement Impact Assessment and proposals, and those comments made by Stark Associates relating to RKD/CGL reports, have been summarised for ease of reference, and a response made. It should be noted that the Stark Associates Schedule should be consulted for the full wording. The numbering used by Stark Associates has been adopted in the table for consistency.

Existing Condition	Neighbours' Consultants' Reviews (summarised)	CGL comments
4	There is no reason why this information (the depth of the contouring of the Bagshot Sand) cannot be provided, as it may have an impact on the design, dewatering of the area and the proposed construction	The boreholes formed at the site extend to 20m (BH1 and BH2) and 16m (BHA) below ground level. The Bagshot Beds have been proven in all boreholes. In BH2, at 18.1m, the change to grey colouration indicates the presence of the Claygate Beds. The depth of the basement construction does not exceed 12m below ground level, and hence the base of the Bagshot Beds is a minimum of 6m below the slab. In this regard the depth of the base of the Bagshot Beds will have no bearing on the design of the dewatering scheme.
7	Concerns have been raised as to whether the levels recorded are true groundwater levels or perched water. Stark Associates advises further investigations are required as such investigation will affect the soils results and the results will have a bearing on the build, design and likely damage to adjacent properties.	The Neighbours' Consultant states RKD has not commented on this aspect, but a detailed description/discussion is set out in the CGL report. Further, the Neighbours' original consultants' reports are dated 31 January 2012 and 25 July 2012 (Mr Eldred), and 23 July 2012 (Dr de Freitas). These reports predate the further monitoring visits undertaken in October and November of 2012, which confirm standing water levels to be generally static, as would be expected. In this regard there is consistency in the groundwater levels
8	No allowance made for underground rivers/springs, or investigations made as to whether they run through the site.	The concept of 'underground rivers' is not valid in the context of which this comment is made. There are rivers that flow through culverts, and these are detailed in Figure 11 of CPG4; none of these are shown in the immediate vicinity of New End. The absence of any alluvial deposits at the site confirms this to be the case. It is considered likely that this comment has been made in relation to an interpretation of the normal flow of groundwater through water-bearing strata (the Bagshot Beds). In any event, the purpose of the groundwater control system for the new development is to address normal groundwater flow in the vicinity of the basement. The issue of springs at the site is considered not to be relevant as the depth to groundwater is sufficient to prevent the occurrence of springs at the site, as spring lines can only occur where the water table meets the ground level.
11	Updated water monitoring results are required by Neighbours' previous consultants. Neighbours' current consultant queries frequency and currency of water monitoring results, and queries flow direction. He also suggests that RKD indicate a flow	As stated in the response to Existing Condition 7, the reports of the Neighbours' previous consultants Messrs Eldred and de Freitas, were submitted before completion of the additional groundwater monitoring. In this regard, groundwater level readings have been undertaken up to November 2012. The direction of groundwater has been determined by CGL as approximately north south, based on all available monitoring data, limiting any 'damming' effect due to the proposed basement. The CGL report updates the RKD report in this

	direction of north east to south east, and then in the Neighbours' Consultant's column it is referred to as north east to south west.	regard.
12	There is limited testing with no measurement of soil permeability.	The GCG / WJ report recognises the need to include the assessment of permeability as part of the preparation for the final design. This is reasonable given that the WJ report has set out the likely components of the temporary dewatering and permanent water control schemes.
13 (and 18)	Dewatering will result in a loss of fines from the soil below the neighbouring properties and structures, which is compounded by suspect groundwater levels and inadequate soils testing. No contamination testing has been carried out.	In respect of the loss of fines, this can be controlled by careful design of the dewatering scheme, using appropriate sized filters around the vertical drains. The concept of the dewatering and the permanent drainage schemes has been considered by GCG/WJ and the sizing of filter media is a detailed design matter.  In respect of contamination testing, there is no evidence of any likely contamination in descriptions provided in the exploratory hole records, and in any event the excavation of soils required to form the basement will remove the Made Ground.
14	Concern over water collection behind the basement wall.	This has been addressed by WJ in their report. The incorporation of vertical drains behind the northern basement wall, in conjunction with the under-slab drainage will address this issue.
19	Seasonal path of water not dealt with.	It is not clear exactly what is meant by the 'seasonal path of water'. Groundwater flow across the site is driven by the head difference in the water table. The permanent drainage system will address the flow of water across the site.
20	No assessment of water pressure and heave on the design.	The permanent drainage system will need to be designed to effectively remove water from the basement structure, thereby maintaining the basement structure effectively free from water pressure. This concept is noted in the GCG/WJ reports.
21	Updated results and further monitoring required for logging of water levels.	Monitoring has been undertaken across the period of a year, with the water levels being generally consistent over this period. Given the urban setting of the site it is not expected that further monitoring would show any significant variation.

In summary, there are a number of consistent themes within the schedule of comments, which have been addressed above, and which address the numbered points made in the second page of the Stark Associates letter. It is considered that the information that has been provided by the Developer's consultants allows an informed assessment to be made regarding groundwater levels and flow direction. The issue of the effects of groundwater on design has been considered by the Developer's consultants and providing that the permanent drainage scheme is designed by a competent organisation taking account of the additional investigation set out by GCG/WJ then, it is not considered that groundwater-related issues would give rise to a significant impact on neighbouring properties.

I trust that this meets with your requirements and should you need any further information, or wish to discuss any of the aspects any further, please do not hesitate to contact me.

Yours sincerely



Ian Marychurch, Director  
Card Geotechnics Limited