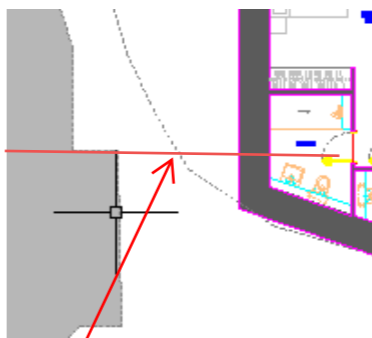
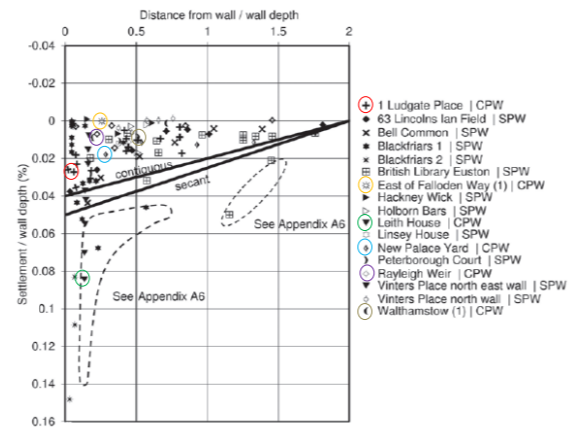


Query No.	Subject	Campbell Reith Query	Status	Date closed out	CGL comments	CR Comments November	CGL Response
1	Stability	The impact of removing trees within the site should be addressed.	Open		<p>The arboricultural report¹ notes several trees will be removed, which are: a group of two semi-mature conifers and maples (moderate water demand), a group of three juvenile apple and elderberry (low to moderate water demand), one mature eucalyptus (high water demand), and line of semi-mature conifers (moderate to high water demand). The highest water demand trees (conifers and eucalyptus) range in height from 3.5m to 4m. 1no. mature lime tree (moderate water demand) is located between the site and Gondar Garden highway and is due to remain within the proposed development.</p> <p>WS02, within the proposed basement dig, identified some evidence of desiccation to 5.5m bgl and the proposed basement will range from 3m to 4.5m depth with formation level some 0.3m below that.</p> <p>Building loads are to be taken by pile foundations and are therefore unaffected by heave in the London Clay caused by moisture content changes. A void former is specified beneath the basement floor slabs and therefore heave pressures on the underside of the slab will be negligible.</p>	As per 4.13 of our audit, the impact assessment for removal of trees should also provide comment on the risk to neighbouring structures.	<p>The trees to be removed are beyond the zone of influence of neighbouring structures. Slight heave to the outbuildings may be expected but this is not considered to be significant and the impact is therefore considered to be low.</p> <p>Thank you, please include this in your revised BIA to ensure all potential impacts are addressed.</p>
2	Stability	Details of the proposed foundation scheme and temporary propping arrangement should be provided.	Open	Nov/20	Foundation scheme and temporary propping details have been provided by the structural engineer, confirming the use of temporary props close to existing buildings in order keep lateral movements within acceptable limits.	No comment – assume closed	This information will be provided by the structural engineer.
3	Stability	Input data for the PDisp assessment should be provided and consideration of the pile foundation options included in the appraisal.	Open		Input data for the PDisp calculations is provided in Section 10.2. Output from PDisp to be included in revised report.	Section 10.2 of your BIA describes the soil parameters but we would also like the PDisp input data to show these have been applied appropriately, and to show that the loading and model geometry is also appropriate for the development.	Attached.
4	Stability	The ground movement assessment and building damage assessment should be revised in line with the comments in Section 4.	Open		<p>4.14 – Propping shown in structural engineers drawing²</p> <p>4.16 – CS1 is taken in the area where there is the greatest potential for ground movements in the centre of the proposed secant piled wall. It is noted that the proposed basement is closer to South Mansions west of CS1, however in this location the secant wall will be much stiffer as it is located on a corner and therefore predicted displacements would be significantly lower in this location.</p> <p>4.17 – whilst it is noted that the zone to the south of CS2 will be unpropped, it does not border the outbuilding of No.3 Hillfield Road.]</p> <p>4.18 – The applied reduction factor of 50% is based on CGL’s experience both with the reported case study, and other case study histories, as yet unpublished Furthermore, the value of 0.04% published in CIRIA C760 is very much a conservative upper-bound value as shown below. The majority of the data point to a value of 0.02%, consistent with CGL’s case study data. The CIRIA C760 plots are based on 6 case studies of contig piled walls, of these only 1 shows installation movement of 0.04% or higher, and that one case study (Leith House) shows significantly higher movements than this, the remainder are clustered close to the 0% to 0.02% as illustrated below.</p> <p>The Leith House case study included ground conditions that comprised of 4.3m of fill, over 2.5m of alluvium, over 2.1m of sand and gravel, over London Clay. Those ground conditions are substantially different to this site, which is entirely within the London Clay. Where alluvium is present over gravels, installation movements may well be anticipated due to fighting on the augers. However for this particular site, and sites in London Clay in general, the installation of CFA piles has not been recorded, on this evidence, and the evidence of CGL’s own records, to generate substantial ground movements.</p>	<p>regarding 4.16 - Please make sure the most critical case is assessed. The part of South Mansions that is 3.3m from the basement is not only located at the basement corner.</p> <p>regarding 4.17 - Please check this against the location of the temporary propping.</p> <p>regarding 4.18 - This reduction to the CIRIA C760 method is not an approach we accept, as it is not considered to meet the council's requirement for the BIA to use a moderately conservative approach.</p>	<p>4.16: The drawings show that where South Mansions is closest to the basement, it is within about 1.5m from the corner. At this distance, lateral movements due to deflection would be negligible given that the wall is rigidly propped here down its length. It is for this reason that this section was not drawn here.</p>  <p>4.17: We have checked this.</p> <p>4.18: This approach has been previously accepted by Campbell Reith and Camden on numerous projects. We have put forward an approach based on engineering judgement supported by experience and monitoring data.</p> <p>Please provide an evidential basis for this change of approach.</p> <p>As per my previous comment, the ground movement lines given in CIRIA C760 are a conservative upper bound to movement data from a number of case studies. This meets LBC policy requirement that the BIA use moderately conservative estimates.</p>

This is the critical section line I was thinking of; away from a corner but still 3.3m from South Mansions. Perhaps this could be assessed in addition to Critical Section 1 to ensure the worst case scenario is definitely captured.

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					 <p>4.20 – It is noted that if a piled foundation is adopted then the raft load 31kPa load applied at slab formation level will not be applied thereby increasing the net unloading. However, compressive strength of heave board void former is ca.30kPa therefore there will be negligible effect of including this in the PDisp analysis.</p> <p>4.21 – BDA has been re-run using only the short term movements. Building damage categories remain unchanged from BIA. Lengths and heights of buildings, and deflections due to short term movements to be added to plots in revised report</p> <p>4.22 C760 states a maximum distance to negligible movement of 4x excavation depth which will produce a less conservative building damage assessment as the predicted displacements are distributed over a larger distance and the resulting building strains are lower.</p> <p>4.23 – As noted within the ground movement assessment, the Gondar Gardens highway is located outside of the zone of influence from the basement excavation. PDisp calculations indicate maximum long term movements at the highway to be between 1mm and 2mm which is negligible for a tarmac road surface.</p>	<p>regarding 4.22 - Gondar House should be included in the ground movement assessment because it is 3.1m from the proposed basement, and will therefore be within the zone of influence of ground movements, which, as you note, extends 4x excavation depth from the basement.</p> <p>(and Q4. regarding 4.23) - As with Gondar House, the highway is 2.8m from the proposed basement, which is within the 4x excavation depth zone of influence for ground movement. The CIRIA C760 movements for installation and excavation should therefore be included in the assessment for the the highway. Furthermore, as this side of the basement is not 'near a building' it is assumed that no propping will be used, therefore a Low Support Stiffness would be assumed for the CIRIA assessment (although this would depend on the propping layout shown on the structural engineers' drawings).</p>	<div style="border: 1px solid red; padding: 5px; margin-bottom: 10px;"> <p>Thank you. Please include the ground movement assessment for the highway in your revised BIA to ensure all potential impacts are addressed.</p> </div> <p>There appears to be an error in the drawing provided which will be updated. The 4 x movements relates to movements due to deflections which would be expected to be very low as Gondar House sits diagonally from a corner of the basement at a distance of some 3.1m. In this location the corner is very stiff and deflection movements very low. For this reason Gondar House has been Excluded.</p> <p>The majority of the basement is >4.5m from the pavement and further still from the carriageway. There is a short section that is within 2.5m of the pavement (approx. 5m from the road), however again this will be a stiff area given its geometry. Assuming low support stiffness of 0.4% retained height would give between 10mm of movement to 20mm of movement for an excavation between 2.5m to 5m deep, this this would reduce to circa. 5.5mm to 11mm of movement at the pavement edge, this amount of movement would not affect the pavement or carriageway.</p>
5	Stability	Further consideration of the impact to the adjacent highway is required.	Open		As noted previously, the highway is outside of the zone of influence from the basement dig.		

¹Keen Consultants (May 2020). Arboricultural Impact Assessment, Reference 1325-KC-XX-YTREE. Retrieved from Camden Planning Portal

²SD Structures (Oct 2020). Email correspondence 5/10/2020. Full drawing to be included in revised BIA.