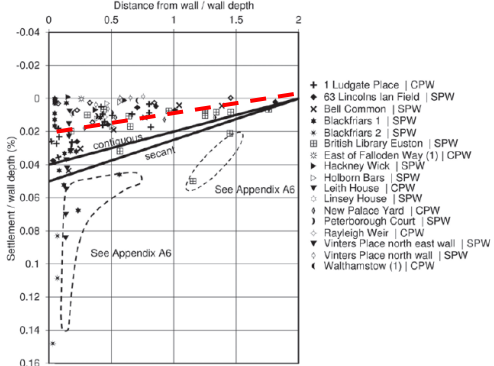


CGL_09528 – The Network Building: LBC Comment Tracker – Scheme RM01 (Office Scheme)

Comment Ref	Date Received	LBC Comment Subject	LBC BIA Query	CGL Comment	Response Date	Status
1	10/02/2021	Stability	<p>Additional information shall be provided to support the suggested by the GMA reduction of the anticipated ground movements due to wall installation or a sensitivity analysis be undertaken using CIRIA C760 curves – Audit Section 4.18.</p> <p><i>“4.18 In the GMA, horizontal and vertical ground movements due to the installation of the proposed secant piled wall have been assumed to be equal to 0.02% of wall length, based on a case study paper by Ball et al. (2014), which are significantly lower than those suggested by CIRIA C760 (0.08% and 0.05% for horizontal and vertical movements, respectively). The case study by Ball et al., refers to a contiguous piled wall consisting of 300mm diameter piles as opposed to a secant piled wall proposed for this site (i.e. tighter pile layout is proposed for this site) consisting of 600mm diameter piles (i.e. double size piles are proposed at this site). It is requested that additional relevant case studies and information are provided to support the anticipated ground movements or a sensitivity analysis be undertaken with regard to the anticipated ground movements due to wall installation by adopting the moderately conservative approach suggested by CIRIA C760.”</i></p>	<p>By necessity a secant piled wall is constructed in a hit and miss fashion. This is so that the wet concrete in recently constructed nearby piles is not damaged during the construction process. These piles are larger diameter, but they are also relatively short, at 9m to 11m.</p> <p>This process is set out in the ICE Specification for piling and embedded retaining walls (SPERWall) document, which will form the basis of the piling method for this development. Movements will be monitored during pile installation such that additional control measures can be adopted if required.</p> <p>It is further noted that CIRIA C760 is based on limited case study data, and therefore has selected a very conservative upper bound estimate of movements. Reviewing the actual case study data reported in CIRIA – Secant Piled Wall movements and Vintners hall were caused by ‘poor drilling techniques’; Blackfriars 1 was a 1.2m diameter secant piled wall next to a very heavily loaded building. The MSc thesis upon which CIRIA C760 is based, makes the comment that 8mm is “a reasonable value which could be expected as an upper limit settlement for most wall installations”. The document also notes “there does not appear to be a relationship between the type of wall construction and the measured surface settlements”. Where large movements behind the wall are noted, it is stated that these are due to adverse ground conditions, poor drilling techniques, and/or effects from adjacent footings.</p> <p>This site has ‘standard’ ground conditions with the London Clay present at the relatively shallow depth of 4.5m; therefore provided construction is</p>		Open

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				<p>appropriately controlled and monitored, significant displacements are not anticipated.</p> <p>It is further noted that CGL has another case study, pending publication – also demonstrating installation movements in line with the majority of CIRIA C760/580 case study data:</p>  <p>b Vertical movements Figure 6.8 Ground surface movements due to bored pile installation in stiff clay (normalised)</p> <p>It is further noted that ground movements will be fully monitored during installation works such that construction methodologies can be adapted/adjusted as necessary. On this basis the selection of a 'moderately conservative' estimate of pile installation movements as opposed to 'worst case' is considered appropriate.</p>		
2	10/02/2021	Stability	Construction sequence to include enabling works and temporary works required to achieve pile platform level and support external ground levels – Audit Section 4.19.	CGL adopted the Piling Platform at +27.00mOD, assuming that the surrounding pavement areas at +28.00mOD would be supported by backpropping them against the basement wall. This is expected to limit the potential movements induced by the difference in level to acceptable values.		Open

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			<p><i>"4.19 a) A construction sequence commencing at a level of 27mOD is proposed (level of proposed piling platform), however, in some locations the basement excavation will start at c.28mOD given the level of surrounding areas (footpaths and highways). Clarification is requested as to the impact of any enabling works required to achieve the piling platform level and confirmation that the current GMA is valid for the deeper excavation. The enabling works shall be included in the construction sequence."</i></p>	<p>However, the basement construction method is yet to be determined.</p>		
3	10/02/2021	Stability	<p>A clarification is required regarding the validity of the GMA given the construction sequence starts at 27mOD while some surrounding areas are at c.28mOD – Audit Section 4.19.</p> <p><i>"4.19 a) A construction sequence commencing at a level of 27mOD is proposed (level of proposed piling platform), however, in some locations the basement excavation will start at c.28mOD given the level of surrounding areas (footpaths and highways). Clarification is requested as to the impact of any enabling works required to achieve the piling platform level and confirmation that the current GMA is valid for the deeper excavation. The enabling works shall be included in the construction sequence."</i></p>	<p>Enabling Works have been considered as part of the PDISP analysis. Enabling Works 5.1, 5.2 and 5.3 are the only areas that lie outside the existing basement and hence, are not applied at +24.92mOD. As indicated by the Structural Engineers, a demolition unload of 52kPa has been allocated to these three areas that have no existing basement, and these demolition unloads have been applied at +27.00mOD (assumed piling platform level), for simplicity.</p> <p>It is true that these demolition loads could have been applied at the formation level of the strip foundations onto which this part of the structure is anticipated to be supported. Given that the FFL of the ground floor is some +28.10mOD and assuming an existing ground floor slab of 300mm and a strip footing thickness of 500mm (to be verified on the next SI phase), the resulting formation level of the strip foundation would be approximately +27.30mOD.</p> <p>Hence, the additional excavation required to match the proposed piling platform level from that post-demolition ground floor level would be 0.30m and this would induce an additional unload of 6kPa.</p>		Open

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				Given the order of magnitude of the excavation unloads (more than 100kPa) and construction loads (90kPa) used in the model, this additional unload of 6kPa is understood to have negligible effect on the outputs of the GMA and as such, the current GMA results provided are considered to be valid.		
4	10/02/2021	Stability	<p>The basement layout considered in Figure 2 of the GMA is of a smaller extent to the current proposal. A clarification is required - Audit Section 4.19.</p> <p><i>“4.19 b) The basement layout considered in Figure 2 of the GMA is of a smaller extent towards the northern-central area of the site when compared to the latest architectural drawings dated 25/11/2020. However, the basement excavation considered in Figure 6 of the GMA seems to match that proposed by the Architect and the structural proposal. Confirmation is required that the correct extent of the basement excavation has been considered in the GMA and in accordance with the latest proposal.”</i></p>	<p>Figure 5 to Figure 7 show the proposed loading areas assumed in the different stages considered in the analysis.</p> <p>Figure 6, specifically, presents the excavation areas considered in PDISP and therefore, shows the external layout of the basement considered. Hence, the resulting ground movements predicted as part of the GMA and used in the Building Damage Assessment plots are as per the structural drawings provided.</p> <p>Figure 2 has been updated to match the proposed basement area as indicated in Figure 6.</p>		Open
5	10/02/2021	Stability	<p>Convergence error messages in Wallap analysis shall be clarified/amended - Audit Section 4.19.</p> <p><i>“4.19 d) Convergence errors are noted in the output of Wallap analysis for critical section 3 and these should be reviewed and corrected as required.”</i></p>	Convergence error amended with no impact on predicted displacements.		Open
6	10/02/2021	Stability	<p>Contradictory information about the ratio L/H considered for Qube building in the GMA shall be clarified - Audit Section 4.19.</p> <p><i>“4.19 e) Figure 19 of the GMA indicates L/H=2.08 while the main text states L/H=1.78 for the Qube building. A clarification/amendment is required.”</i></p>	Based on the dimensions assumed in the PBIA, L/H should be 1.78, as specified in the text. Figure 19 updated accordingly.		Open
7	10/02/2021	Stability	<p>The proposed Observation Method shall be clarified. The ground movement trigger values shall be informed by the GMA - Audit Section 4.21.</p>	It is recognised that monitoring is essential to confirm movements during enabling works, excavation and construction, however the details of		Open

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			<p>“4.21 Section 10 of the GMA proposes a monitoring strategy to be applied during construction with predefined ground movement trigger levels in accordance with the Observational Method of CIRIA Report 185. However, CIRIA’s Observational Method is relevant mainly to the design method, not the monitoring strategy. It is understood that the design at the site will be undertaken by use of calculation, not by use of the Observational Method. Also, the trigger levels adopted during construction shall be informed by the ground movements predicted in the GMA. Clarifications and amendments are requested.”</p>	<p>the methodology will be developed with the party wall surveyors prior to the works commencing. It is not appropriate at this stage to incorporate a detailed methodology for monitoring, which for practical reasons may ultimately conflict with that proposed and agreed between the PW surveyors.</p>		
8	10/02/2021	Stability	<p>Monitoring during the demolition and enabling works stages is requested to be added in the monitoring strategy – Audit Section 4.22.</p> <p><i>“4.22 Monitoring of all structures and infrastructure is also recommended by the SER (scheme RM01) during excavation and construction. It is requested that monitoring is also undertaken during the demolition and enabling works stages to confirm the conclusions of the GMA.”</i></p>	<p>Monitoring can be undertaken by installing survey targets along the top of the secant piled wall and ideally on the façade of the neighbouring properties/structures.</p> <p>Baseline values should be established prior to commencement of works as outlined below:</p> <ul style="list-style-type: none"> • Monitoring targets installed on the facade of the neighbouring structures and baseline reading established prior to demolition and/or enabling works and piles installation. • Monitoring targets installed along the capping beam once constructed and baseline readings established prior to the main basement excavation/construction works commencing. <p>However, as indicated above, the more specific details of the methodology and trigger values will be developed with the party wall surveyors prior to the works commencing.</p>		Open

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9	10/02/2021	Stability	<p>An impact assessment on third parties assets (LUL, Thames Water etc.) will be required in accordance with the respective asset owner’s policies – Audit Section 4.9.</p> <p><i>“4.9. According to the Geotechnical BIA report (RM01), the site appears to fall within the LUL influence zone and the Crossrail 2 safeguarding zone while a number of sewer and water mains are present in proximity. These site constraints are also discussed in Section 2.3 of the BSCR, for RM02. An impact assessment on these assets will be required in accordance with the respective asset owner’s policies and shall form separate submissions for whichever scheme is progressed to the next stage. Such an impact assessment check is outside the remit of this audit report.”</i></p>	Noted.		N/A