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Our ref J14349/MC/5

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Senior Planning Officer
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Dear Gideon

Re: AUDIT OF BASEMENT IMPACT ASSESSMENT FOR 13/15 JOHN'S MEWS WC1N 2PA (2014/3330/P)

Further to your ongoing instructions, we have now reviewed the additional information provided to support the Basement Impact Assessment (BIA) relating to the proposed basement construction at the above site. This letter supplements our previous reviews and should be read in conjunction with our previous letters J14349/MC/1 of December 2014, J14349/MC/2 of May 2015 and J14349/MC/3 of November 2015 as well as J14349/MC/4 of February 2016.

1.0 Existing Information

The following documents comprise the information that was revised and reviewed in February 2016 and remains the basis of the basement proposal.

- Chelmer Basement Impact Assessment (BIA/4507D Rev 5) dated January 2016
- FT Architects Drawing Nos 200_32_100, 200_32_01, 200_32_02, 200_32_03, 200_32_04, 200_32_17, 200_32_18, 200_32_19, 200_32_20, 200_32_21, 200_32_22
- Barrett Mahony Drawing Nos L14771/00-T2, 01 PL1, 02 PL1, 03 PL1, 04 PL1, 05 PL1, 06 PL1, 701 PL3, 702 PL1, 703 PL2
- Chelmer Landborne Gas (and groundwater monitoring) results sheet dated 20 January 2016

2.0 Supplementary Information

Further information has now been supplied in addition to the documents above and this review considers the supplementary information which comprises additional gas and groundwater monitoring data, a revised ground movement assessment and a revised geo-environmental assessment.

For clarity the revised documents are listed below.

- Addendum Letter (Ref: BIA/4507f) Report Revised Ground Movement and Damage Category Assessments, dated 6.5.2016

- Gas/Groundwater Monitoring Results Sheet (4507F) prepared by Chelmer Site Investigation Laboratories Ltd

- Landborne Gas Assessment (CCS/4507D) prepared by Chelmer Site Investigation Laboratories Ltd

- Geo-environmental Interpretative Report (GENV/4507) REV 3 dated June 2016 by Chelmer Consultancy Services

The new documents update previous submissions in the light of additional groundwater monitoring that was undertaken in January and March 2016 and brings previous reports in line with the latest drawings.

3.0 Discussion

The BIA document itself has not changed from BIA/4507D Rev 5 dated January 2016. However, and as recommended by previous BIA reviews, groundwater monitoring has now been undertaken through the winter and spring of 2015/16. The results of the monitoring show that the groundwater level appears to have stabilised at a depth of around 3.0 m below existing ground level and was at its shallowest in March 2016. The BIA has suggested in any case that the new basement should be designed for a groundwater level of 1.0 m below existing ground level which will therefore be appropriate. Most important however is that the contractor will now be aware of the groundwater conditions when finalising the practical construction detail. It is recommended that groundwater monitoring should be continued until the start of groundworks.

The ground movement analysis has been updated to reflect the proposed construction sequence and the detail of the piles working in temporary and permanent conditions. The ground movement assessment has considered the detail of the load transfer as the basement loadings are transferred to the piles and notes that the degree of ground movement is dependent in particular upon the capacity and hence settlement potential of the piles as well as the quality of the base of the underpins. The ground movement assessment has identified where the key risks lie with the proposed construction methodology and has set out that if works are not undertaken properly then higher settlements could occur. However, on the basis that the advice and recommendations set out in the BIA are followed then the ground movements would cause damage no higher than Category 0 – negligible to the rear of No 23 John Street. In that sense the ground movement assessment has fulfilled its need at this stage in the process in that it has predicted movements based on best practice and sequencing. This is considered sufficient at this stage for planning consent to be granted but LBC may require that conditions are imposed to ensure that a further ground movement assessment is undertaken following detailed design and in conjunction with a Basement Construction Plan.

It would be appropriate, we consider, for the contour plots of the movement assessment to be expanded for each construction stage to incorporate the walls of the surrounding buildings along with the detail of the input parameters for the PDisp analysis. The data should be used to provide the calculations of the damage assessment for each of the walls nearby that might be affected by the basement construction. It would also be helpful in explaining the effects on neighbouring buildings to their residents.

The Geo-environmental report has been updated to include the revised groundwater monitoring data.

4.0 Basement Construction Plan

The conclusions of our previous reviews stated that *'the revised Basement Impact Assessment, when read in conjunction with the architect's drawings and Barrett Mahony drawings, is a thorough assessment of the impact of its construction.*

Provided that the recommendations within the BIA are followed in full then it is considered that

the methodology proposed provides sufficient confidence in the protection provided to the surrounding structures. It is acknowledged that satisfying the council's requirements for this project relies on a particularly high standard of workmanship and monitoring and appropriate timing of any mitigation measures that are indicated by the monitoring to be necessary. The council may therefore wish to apply conditions relating to the level of expertise and supervision involved in the construction of this basement.'

It is still our recommendation the council secures a Basement Construction Plan to ensure that the high standards of workmanship and monitoring are maintained. Particular attention should be given to the following as a minimum.

- Monitoring of party walls and boundary walls for movement at all stages of the project.
- Review of construction status drawings prior to commencement
- Review of the contractor's method statement prior to commencement
- Ensuring, by regular inspection, that the measures set out in the BIA are undertaken particularly in respect of mitigation of groundwater ingress during the underpinning process
- Ensuring that the excavation sequence detailed on BM Drawing No 701 Rev PL3 is followed.

Additionally, and on the basis of Chelmer's updated ground movement assessment, it would be advisable to undertake a trial underpin to the central spine wall. This would be relatively distant from the party walls on all sides but would provide an opportunity to monitor the structure during the trial and to assess the effect of groundwater ingress whilst also proving the suitability of the proposed construction process. It could thereafter be incorporated into the permanent works but should further allay the fears of neighbours.

5.0 Comments in relation to objections

We have been asked to consider comments raised by those objecting to the proposed development on 16 June at 10:36; 17 June at 15:47; 20 June at 15:33 and 4 July at 11:58.

Comments relating to procedure, listed building consent, heritage, conservation and overlooking are not within our expertise so cannot be addressed herein. Our expertise relates to the basement impact assessment but we are also able to add comment with respect to soil contamination.

The objectors' comments chiefly relate to the impact of the construction on surrounding buildings and in respect of benzo(a)pyrene contamination. The detailed objection letter from the occupiers of 24 John Street incorporate the comments of the other three objections and will form the basis of our comments.

Section 5 discusses the revised ground movement assessment and points out correctly that it represents the development of the previous model into one that reflects the current proposal for construction. As such, the ground movement assessment has looked much more closely at the proposed methodology and has highlighted the areas of concern and set out the potential risks associated with the proposal. It is our view that the requirements of CPG4 in determining the impacts have therefore been met at this stage in the planning process. It is accepted that further work will be required at detailed design stage and that the ground movement assessment will be refined a number of times before construction begins. It is for this reason that the securing of a basement construction plan through a S.106 notice has been recommended to ensure that, stage by stage, the design and construction are tightly controlled.

Notwithstanding the above it would be reasonable for the ground movement analysis to be expanded as noted in Section 3.0 above to demonstrate to the residents of surrounding buildings that the predicted movements will be sufficiently small as to not cause unacceptable levels of damage.

The piling of this site, whilst not easy in terms of accessing the site, is not in itself considered to be particularly difficult and a higher degree of settlement certainty will be obtained by the proposed structure being supported on piled foundations.

The objections in relation to the presence of contamination revolve around benzo(a)pyrene and lead contamination. The single measured concentration of benzo(a)pyrene of 1.8 mg/kg is below the value of 5.0 mg/kg that we would typically use for residential gardens for which children aged 0 to 6 are the sensitive receptor. There should, therefore need be no concern in this respect. In respect of dusting, it is assumed that the basement construction plan will also detail how spoil is to be dealt with and on the basis that a reputable contractor is used then there should be nothing different to any other basement construction in respect of removing spoil from site using standard dust suppression techniques. The downward migration of contaminants through piling is considered to be a remote possibility and the risk may be considered negligible. Piles will be bored rather than driven and will be cased into the London Clay such that no contaminants can fall into the bore. The piles will then be concreted from the base up and any contamination outside the casing would be prevented from downward migration by the rising wet concrete. No concern needs to be raised in this respect and we understand that Environmental Health and the Environment concur with this view.

As we stated in an earlier letter we hope that the above comments will be useful in allaying the fears of Mr Morgan and Ms Coombs but we would be pleased to discuss the matter with them and yourselves if you think that would be a useful exercise.

We trust that the foregoing comments are sufficient for your needs.

Yours sincerely
GEOTECHNICAL & ENVIRONMENTAL ASSOCIATES

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