Michael J. Wiseman
The Basement Design Studio
Suite 17
Maple Court
Grove Park
White Waltham
Berkshire
SL6 3LW

5th January, 2014

Basement impact assessment for Flat 1, 27 Oakhill Avenue

Dear Mr Wiseman,

I am a UK-based independent hydrogeologist with more than 15 years' consulting experience in solving groundwater issues for regulators, water companies and other private sector organisations. **I am a Chartered Geologist with the Geological Society of London.**

As requested, I have reviewed in detail the hydrogeological aspects of the basement impact assessment (BIA) report reference 140513 from Croft Structural Engineers, and the independent review by LBH Wembley reference LBH 4275.

I have considered the points raised in the LBH Wembley review and have prepared this letter to meet the following concerns (references are to sub-sections of the LBH Wembley review):

3.2.1 The Croft Structural Engineers report is to be endorsed by a Chartered Geologist.
I am pleased to be able to endorse the findings relating to groundwater flow in the revised BIA report from Croft Structural Engineers (dated 17 November 2014). Detailed comments are made in Appendix A to this letter.

3.2.6 To improve the understanding of whether groundwater is present or absent at the site.

While no additional groundwater data is presented I have made comments in Appendix A that seek to demonstrate my confidence that the site investigation sufficiently demonstrates that there is negligible additional risk from the proposed development.

Appendix A:

<u>Screening</u>

I concur with the BIA findings in the scoping stage related to subterranean flow. It is appropriate to carry forward the question regarding spring lines, due to the proximity of the lower boundary of the Claygate Beds. Following on from this, it is appropriate to consider that the lowest part of the basement is likely to be below any spring line. I note

ambiental®
predicting · preventing · protecting
The Sussex Innovation Centre Science Park Square Brighton BN1 9SB, UK
Tel: +44(0)1273 704441 Fax: +44(0)1273 704499 www.ambiental.co.uk

that there will be a small increase in impermeable area, also an issue to carry forward to the scoping stage.

Scoping

The property is mapped (on the BGS website, as quoted in the BIA) as lying on London Clay but the outcrop of the Claygate Beds is close uphill. Slightly higher permeability of the more silty Claygate Beds can sometimes lead to the development of springs at the base of permeable layers in the Claygate Beds (not just at the base). In other local site investigations Claygate Beds is sometimes observed to host a groundwater body.

Whilst the mapping indicates that there is limited risk of the presence of Claygate Beds below the site, it is appropriate to rely on site-specific results from an intrusive investigation.

A moderate increase in impermeable area in the development is acceptable as the London Clay has a very low permeability, so the groundwater regime will not be altered by a slight reduction in recharge to the ground.

Site Investigation

The site investigation comprised one borehole that penetrated, below made ground, 5.3m of 'Frim, brown, silty clay with claystone nodules and crystals.' If this was homogeneous down the borehole then this appears to be wholly within the London Clay. The borehole was dry on completion. This is typical of shallow boreholes completed in the London Clay, and this result is observed in many local site investigations. Such boreholes typically stay dry unless rainfall gets in.

Impact Assessment

The proposed basement poses no risk to altered groundwater pathways since the basement will be entirely within the London Clay, which has a low permeability and does not contain a groundwater body.

Yours sincerely

Dr Stephen Buss MA MSc CGeol
Hydrogeologist

THE GEOLOGICAL SOCIETY
CGeol
CHARTERED GEOLOGIST
Fellow No. 10004065

ambiental
predicting · preventing · protecting
The Sussex Innovation Centre Science Park Square Brighton BN1 9SB, UK
Tel: +44(0)1273 704441 Fax: +44(0)1273 704499 www.ambiental.co.uk