

NOISE AND VIBRATION REPORT
THE PROPOSED HOUSING
at
VICTORIA AVENUE, WHITEFIELDS, BURY M45 6DP

In accordance with planning approval reference 68691

By Mark Quin

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Background

Planning permission No. 68691, was granted on, contained, amongst others, a condition precedent, which requires a vibration report before construction works commence. Specifically, this is condition 14 of the permission concerned

With regard to the advice offered in BS 5228: 2009 Parts 1 and 2 (Code and practice for noise and vibration control on construction and open sites) noise vibration needs to be considered.

Existing Site Description

The Redevelopment and change of use of the site to provide 30 new residential dwellings along with associated works including landscaping and provision of access from Victoria Avenue, including highway works to Victoria Avenue

Method of Piling

The site investigation indicated that there is filled ground across the site with good bearing strata below 3m, which is too deep for traditional foundations, therefore piling is required. Below 3m the natural sandy clay is very variable with unpredictable strength parameters such that the piles will need to be installed at different depths across the site.

There are many different types of piling available and the planning condition suggested hydraulic jack piling or CFA.

Hydraulic jack piling is designed for sheet piling. It can be used for bearing piles but needs a reaction method, such as anchor piles or kentledge, which is not appropriate for this site.

CFA piles will be unsuitable on this site for the following reasons.

- The plant is prohibitively large for such a small site.
- The ground conditions are very variable such that it is very difficult to determine the correct installation depth, which means that some piles will be bored deeper than necessary to be safe, or risk pile failures. This in turn leads to longer time period and more disruption.
- CFA piling requires multiple diesel engines:
 - The rig
 - Excavator in attendance for spoil
 - On site dump truck for spoil
 - Off site haulage of spoil to tip
 - Concrete delivery lorries
 - On site concrete agitator
 - Concrete pump.
- CFA piling would take up to 6 weeks on site.

Whereas precast concrete piling is more suitable in these ground conditions as every pile is installed to a set which is independent of the borehole records so can react to local changes in ground condition. There are also far fewer polluting diesel engines with only the rig, telehandler and delivery lorry and no spoil to be removed. And the site operation will only take 2-3 weeks.

Driving piling may make more noise for a short period, however, when taken as an average the LEQ reading is less than the constant noise of CFA piling and the time taken on site is less than half so the overall disruption is far less.

Total Piling Ltd have been selected because they have small rigs that have been specifically designed for working in residential areas to cause the minimum of disruption.

Typical noise levels are attached, subject to wind weather and site conditions. Normally accepted limits for residents is 75dB, which is around 20m from the rig. Most properties are further than 20m from the piling. Keeping doors and windows closed greatly reduces noise pollution if the residents are at home. Advice will be given by letter drop.

Similarly, typical vibration levels are attached, subject to ground conditions. Loose filled ground is a bad transmitter of vibration therefore levels on this site maybe less than typical levels. Normally accepted vibration levels for DILAPIDATED structures are 10mm/s peak particle velocity, which is at around 5m from the rig. No houses are that close, and all appear to be in reasonable condition, therefore vibration should not be a structural problem. However, vibration is often perceived to be a problem as humans are sensitive to vibration. A letter drop will be carried out to re-assure residents.

The noise and vibration levels will be monitored and recorded. If necessary, the power of the rig can be reduced, which reduces the levels, but also increase the time taken to install a pile.