Mr A. Davies

Site Investigation Report

Proposed Housing Development

Talbot Road/North Road, Glossop

MRE/J1172
12 January 2010

1.0 Purpose of Report

1.1 Mr Davies owns the above site and is proposing to develop it with two detached properties.

1.2 He has engaged TFA Architectsas Architects.

1.3 In order to design the foundations and specify a suitable ground floor construction information about the ground conditions is required.

1.4 This report is therefore prepared on the instructions of Mr A. Davies to comment on the findings of a ground investigation and to make appropriate recommendations with respect to the proposed foundations and ground floor constructions.

2.0 Proposals

2.1 The Architects drawings show that the two proposed dwellings are to be of traditional two storey masonry construction with pitched tiled roofs. No basements are proposed to either of the dwellings.

3.0 Geology

3.1 Examination of the geological map for the area indicates that the drift deposits covering the area of the site as likely to be glacial boulder clays.

4.0 Site Investigation

4.1 The investigation, which was of the mini-bore type, was undertaken by Mini-bore site investigation on Thursday the 17 December 2009. Five boreholes were sunk to a maximum depth of 5 metres. In situ shear vane testing was undertaken and samples were recovered for analysis and determination of the plasticity indices. The locations of the boreholes and borehole logs, together with the test results, are attached to this report as appendix A.

4.2 When facing the site from North Road there is a slope down from left to right of the order of 9 or 10 metres. Across the area of the dwellings this slope amounts to approximately 2.5 to 3 metres. The site is well wooded with many trees. A tree survey has been carried out and a plan formed for retention and felling.

4.3 To the left hand side and the two rear sides of the site there is residential housing and the right hand boundary is formed by Talbot Road. The proposed dwellings and their plots will cover, approximately, the left hand side of the site.

At the time of the investigation there was no evidence of existing buildings upon the site.

5.0 Conclusions and Recommendations

5.1 The boreholes taken across the site have indicated relatively consistent ground conditions with, in most cases, a firm, slightly sandy clay, underlying made ground and giving way to stiffer clay with some inclusions of mudstone.

In boreholes 1 to 4 the topsoil and made ground is between 0.3 and 0.4 metres thickness. However, in borehole 5 the possible made ground extended to approximately 1.1 metres and was underlain by a softer sandy clay which did not become firm until 1.7 metres depth. Only bore hole number 3 found evidence of ground water and this at a depth of 4.4 metres.

5.2 Shear vane test values generally ranged from between 54 to 130+ kN/m² apart from in the soft clay of borehole 1 where a value of 30 kN/m² was noted.

5.3 The samples sent for testing revealed plasticity indices of 23 and 14. 14 would be classified as low shrinkability by the NHBC Guidance for building near trees and 23 would be just into the medium shrinkability category.

5.4 It is my opinion that the proposed dwellings can be founded on traditional strip or trench fill foundations taken down into the firm clays at a minimum founding depth of 900mm below proposed ground levels. At this level I am of the opinion that a nett allowable ground bearing pressure of 100 kN/m² can be utilised in the design process.

5.5 The proximity and distance to the remaining trees will influence the required foundation depth as will their species. In calculating the required depths I would recommend that the soil is classified overall as medium shrinkability. In some cases, particularly where the buildings are closest to the Poplar trees foundation depths of the order of 2 metres will be required.

5.6 At foundation depth in excess of 1.5 metres the inside of the foundations will need to be protected against potential heave in line with the recommendations of the above mentioned NHBC Guidance.

As the sub-soil appears to be entirely natural and there is no evidence of a previous use of the site which would provide raised levels of chemicals in the ground which would be damaging to the foundation concrete, we would recommend that designated mix GEN3 may be utilised.

5.7 As there is a possibility of ground movement due to heave or shrinkage of the clay sub-soil we would recommend that a suspended ground floor construction is utilised for the dwellings. This may be of either pre-cast or in situ concrete or may be of timber if preferred. In each case a void will be required to be left below the ground floor construction to accommodate any ground movement. Probably the most common form of floor construction with dwellings of this type is beam and block.

5.8 This report is confined to the matters mentioned in Section 1 and no opinion is expressed or implied on matters not specifically mentioned.

5.9 The conclusions and recommendations given above are based on the information found at the trial hole locations. Should the ground conditions be found to vary at intermediate locations we would reserve the right to amend the recommendations accordingly and if necessary.

Mark R Edwards
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APPENDIX A