

Barton Engineers Ltd

Planning Report

51 Fitzroy Park

Ground Condition and  
Substructure

12/02/2009

## Proposed Basement Construction and Ground Conditions

The following describes the general method of construction for the proposed new house and semi-basement on 51 Fitzroy Park. These proposals are based on detailed desk studies and intrusive investigations carried out on the site and also on adjoining sites.

Our study reveals that the site is underlain by sand of the Bagshot Formation, which is in turn underlain by the Claygate member of the London Clay Formation (see Sheet 256, 1:50,000 series, British Geological Survey).

These findings were confirmed by a site investigation carried out at 51 Fitzroy Park, in September 2008, where it was found that the Bagshot Formation was represented by alternating layers of sand, gravel, and silts. This extended to a depth of up to 4 metres below ground level, and was then underlain by the soft clays and silts of the Claygate Formation that was itself proven to a depth of at least 8 metres. Ground water was not encountered during the site investigation but standpipes were installed in two boreholes. After two weeks the ground water level in the standpipes were recorded to be approximately 2 metres below ground level. Our previous site investigations on sites in the area indicate a quantity of 'perched' ground water was encountered in the permeable sands and gravels, that overlie the impermeable Claygate Formation, and the levels of ground water varied between 2 and 4 metres below ground level. This variability in ground water level is explained by the range of permeability found within the Stanmore Gravel; lenses of high permeability gravel and sand, encased in low permeability silts and clays found within the same stratum.

Given these ground conditions, it is clear that any excavation is very likely to encounter some ground water. The current method statement takes account of this, and will allow the new basement to be constructed below the anticipated ground water levels without any damage occurring to the adjoining properties or change in the existing ground water regime in the immediate area.

The first phase of construction comprises the installation of a temporary steel sheet piled wall around the perimeter of the new basement. This will utilise interlocking piles, installed using the 'zero system' of noiseless construction. The sheet piled wall will act as a temporary perimeter retaining wall around the new basement area, and will have a fully designed lateral draining system to prevent any ground water lateral movements that might affect neighbouring properties. Importantly, it will also prevent any potential ingress of ground water into the new construction during the temporary state.

The second phase will comprise excavation of the new basement and the new permanent basement floor slabs, retaining walls, and ground floor slabs. All will be constructed in conventional reinforced concrete, using a watertight form of construction. The foundations will comprise of a combination of reinforced concrete rafts, ground bearing slabs and mass concrete strip footings, all to be constructed on the Claygate Formation.

The existing ground water regime comprises a partially linked network of cells or lenses within the gravel and sands, and retained by the clays and silts, all occurring within the Stanmore Gravel. There can be little or no horizontal flow within this cellular system and so the addition of an impermeable basement will not affect the existing condition.

All works will be strictly carried out in accordance with agreed detailed method statements, and will be monitored throughout.

Danny Cooposamy

Barton Engineers Ltd