

Borehole Sampling

Window Sampling Boreholes

Window sampling or windowless sampling is a technique used to bore through shallow soft soils to investigate the substrata in order to gain a profile of the ground conditions and to facilitate soil sampling for chemical and geotechnical analysis.



Small diameter cylindrical steel tubes (with cut out windows) are driven into the soil with a mechanical (petrol, electric or hydraulic) hammer and extracted manually or hydraulically. The samplers will show a virtually undisturbed horizon for logging and (sub) sampling.

Window sampling can be used contaminated land and geotechnical investigations and for the installation of ground gas and ground water monitoring wells.

Such rigs are good for investigating areas where access is limited. In addition to the standard window sampling machines, modular and hand-held equipment is available for difficult access such as embankments or basements. Electric rigs are also available for use in areas that may be sensitive to fuel exhaust and/or do not have suitable access for ventilating exhaust fumes.

The equipment is track mounted and is capable of carrying out *in situ* testing, including SPT/CPTs and dynamic probe testing. Dynamic Probe testing is a continuous soil test procedure which enables the relative density or strength of the ground to be inferred.

Rotary Boreholes

For deep observations of coal bearing strata Rotary Open Hole techniques are employed to investigate the presence of shallow (<30m) coal using a water flush system to prevent the ignition of potentially explosive mine gases. The technique is

not suitable for effective sampling but is a quick procedure for probing the presence of old mine workings. Combinations of techniques can be used, such as windowless sampling, as well as the rotary open hole technique, if suitably less disturbed samples are required from the upper strata. This can facilitate a number of investigations and assessments being carried out with one site visit rather than two or more.

In a coal mining area, before works are carried out, there will be a need to obtain permission from The Coal Authority. It should be noted that this can sometimes take up to 28 days for permissions to be obtained but they do offer an expedited service in which we will receive the permission within 2 weeks at an increased cost of 100%.

Our service provides the client with obtaining the licence, carrying out the site works and then providing a factual report.

Cable Percussive Boreholes

Cable Percussive Boreholes can achieve deeper borehole depths than Window Sampling techniques and can achieve depths of over 20m (possibly up to 50m depending on conditions) using a clay cutter through cohesive soils, a casing and shell through granular soils and a chisel to break up rock and other hard layers.

A Cable Percussion drilling rig (otherwise known as Shell and Auger drilling rig) is a mobile tripod rig towed by a 4x4 wheeled drive vehicle.

Casing allows stability to be maintained within a borehole where loose and water bearing granular soils are present. 150mm (6inch) or 200mm (8inch) diameter casing are generally used, with other larger diameters available upon request.

The ground bearing capacity can be determined within the Cable Percussive Boreholes from Standard Penetrations Tests (SPTs), Cone Penetration Tests (CPTs) and undisturbed U100 samples. In addition, disturbed bulk and jar samples of each stratum will be taken for Geotechnical and Contamination Testing, and for our Engineers to log in accordance with BS 5930, BS EN ISO 14688-1 and BS EN ISO 14689-1.

On completion, the boreholes are backfilled and reinstated, or standpipes can be installed for Gas Monitoring and/or Groundwater Monitoring.