

# Contact Details

Should you have any queries about the ground investigation process, please do not hesitate to contact us.

During the investigation, you may find it preferable to contact our local survey team who will have spoken with you.

## The Consultation Manager

Shorefield House,  
30 Kinnegar Drive,  
Holywood, Co Down, BT18 9JQ  
Tel: 0845 602 6422  
www.a5wtc.com

This space is provided for you to note down the name of the local A5WTC GI coordinator.

Name \_\_\_\_\_

Phone \_\_\_\_\_

Name \_\_\_\_\_

Phone \_\_\_\_\_

Notes \_\_\_\_\_

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# Ground Investigation (GI)

## Where are we now?

At the exhibition held in Summer 2009, we showed the main features of the ground that affected the selection of the preferred route – hard rock, soft ground, re-usability of excavated material, potentially contaminated land.

## What do we need to do next?

What we now need to do is carry out a detailed ground investigation.

## Why do we need ground investigation?

An investigation is needed so that we can determine the ground conditions to inform the design in the area of the preferred route of the road, potential slope of cuttings & embankments, types of foundations for bridges, retaining walls and assessment of any potential contaminated ground.

## Why is it needed now?

The findings of the investigation will inform the slope of the earthworks and therefore the amount of land to be vested.

## What does it involve?

The inside pages of this leaflet give details of the most common investigation techniques.

## How will it affect me?

It is necessary that the investigation takes place along the line of the preferred route. Therefore much of the works will be on farmer's fields. Our surveyors will shortly be making contact with you to arrange access prior to site works commencing. It is our intention to give you at least 2 weeks advanced notice and to minimise the impact on your land and your farming

practice. During the site works, our surveyors and the contractor will keep in close contact with you.

Some of the work will be on public land and/or the road network. These areas will be signed and fenced, but if you encounter us working on the road, please slow down and take care when passing.

## Will I be compensated?

The Roads Service will pay compensation for the use of your land for the GI.

## Will the ground be reinstated?

Excavations will be backfilled straight away and the surfacing reinstated as close as possible to the existing, though please be aware that this cannot be completely pristine.

## What about bio-security?

We will comply with the recommendations of DARD about bio-security at the time of the works. However, if you have particular requirements or concerns, please raise them with our site staff.

Should you require this document in Irish or an alternative accessible format e.g. Braille, audio cassette, minority ethnic language, please contact us at the above address.

ROADS Service

A5WTC

# Ground Investigation Works 2009 - 2010



# Methods of Exploration

The main exploration methods are using trial pits and boreholes

## Trial Pits

Trial pits are typically 3m x 1m on the ground and excavated up to a depth of approximately 4.5 metres. They are normally excavated by a hydraulic back-hoe (JCB or tracked digger). The use of trial pits allows a sound visual assessment of soils and taking of large samples for testing. Upon completion of the excavation and sampling, excavated material is returned to the trial pit, compacted in layers and the surface turf and grass replaced.

## Boreholes

A cable percussion tripod rig is normally used to sink boreholes. A typical percussion rig consists of an engine-powered winch and tripod frame which is easily collapsed for transportation and can be towed by a 4x4 vehicle. Boreholes can be up to 250mm in diameter and up to 20 metres deep. Samples allow identification of soils and layering and high quality samples are taken for strength and suitability testing.

When hard rock is encountered, lorry or track-mounted core-drilling rigs must be used to extend boreholes. These are more substantial plant, accompanied by an air compressor. Cores are typically 100mm diameter and provide a lot of information about the strength and fracturing of rock, both in excavation and its potential for re-use.

Standpipes may be installed in some boreholes to allow the level of the water table to be monitored. The steel standpipe normally projects about 300mm above ground and fencing will be erected around standpipes to protect livestock and to prevent damage to farm machinery. We would like standpipes to remain in place until construction works start and staff may visit occasionally to record the groundwater levels.

Boreholes (except those fitted with standpipes) will be backfilled on completion.



Trial Pit - Hydraulic Excavator



Truck mounted CPT Probing

# Methods of Exploration

There are range of additional “probing” methods that might be used in special circumstances:-

## CPT Probing

CPT probing is a rapid technique that involves pushing a 50mm steel probe into the ground to obtain an indication of the character of the underlying soils. Measurement of the force required is a direct measurement of the strength and compressibility of the ground.

Based on a lorry chassis, this technique is most useful on soft ground and can reach a depth of 20-25m. The hole usually closes up automatically on withdrawal of the probe.

## Hand-held probing

Where the ground is too soft or too steep for mechanical plant access, then hand-held tube samplers and probes will be used.

For sampling, a 75mm tube is hammered into the ground using a “kango”- type hammer. Typically up to 4m deep, this gives samples roughly equivalent in value to a small borehole, though boulders and stones can severely limit its depth.

To map the extent of peat, especially for widespread bogs, we anticipate a large number of rapid hand-held probes using a 50mm diameter rod to sound the depth of the peat along the line of the route.

For all probing techniques, the ground normally closes up immediately upon withdrawal of the probe, leaving no lasting impression.

## Reinstatement

Inevitably, excavating holes will leave some residual signs especially in the case of boreholes and trial pits. We will endeavour to return the topsoil and turf or other surfacing to the completed hole, though inevitably there will be a slight mound until the earth settles back to its original level. Some rutting of access routes will be unavoidable, but we will endeavour to minimise this by using the agreed access routes and re-levelling the worst affected areas.



Core Drilling



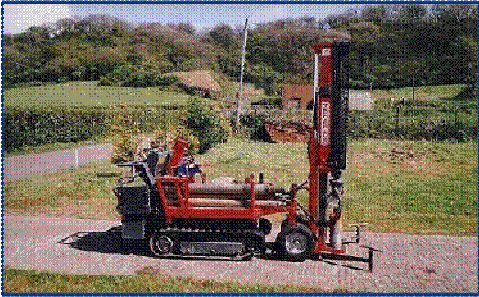
Hand Held Probing of Peat



Cable Percussion Drilling

## Window Sampling

Window Sampling utilises a track mounted rig (see below) to drill small diameter holes to enable samples to be taken and install monitoring well is required. Window Sampling involves driving open-sided steel tubes approximately 40-80mm in diameter into the ground using a jack or percussion hammer. The tube is then retrieved, and a disturbed sample is obtained through the 'window' in the tube.



## Standpipe installation

Standpipes may be installed in some boreholes to allow the level of the water table to be monitored. The steel standpipe normally projects about 300mm above ground and fencing will be erected around standpipes to protect livestock and to prevent damage to farm machinery. We would like standpipes to remain in place until construction works start and staff may visit occasionally to record the groundwater levels.

