1 Geotechnical investigations

Our crews are undertaking a range of geotechnical investigations. These investigations are important for measuring the various ground conditions along the designation and will help inform our design.

Types of investigations we may undertake

Cone penetrometer tests (CPTs)

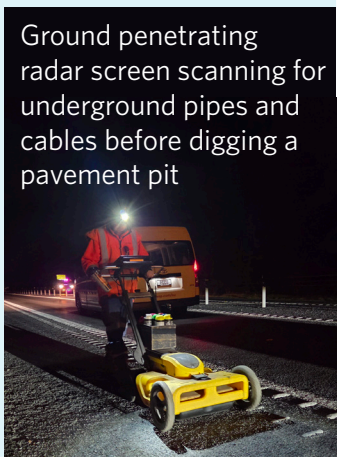
CPT tests gather general information about the soil, including soil type, strength, and density. This is achieved by pushing a small cone (approximately 30mm diameter) up to 50m into the ground.

Cone penetrometer test rig is positioned into the right place for testing

Test pits

For test pits we use a digger to excavate approximately 0.5m x 2m, up to 7m deep. Like boreholes, these test pits also allow us to collect data about the soil and rock through physical samples.

WSP geologist investigating a pavement pit on SH1 at Karāpiro



Ground penetrating radar screen scanning for underground pipes and cables before digging a pavement pit

Piezometers

After completing a borehole, we may need to leave a piezometer in the ground, which is a small device that measures groundwater. This would need to remain there for about 1 year but sometimes longer, and engineers would need to access and monitor them periodically.

Machine boreholes

Machine boreholes are drilled vertically using a rig about the size of a small farm tractor of approximately 5–10 tonne. Boreholes provide further data about the soil and rock conditions, and allow us to collect samples.

We will need to source water for the drilling from a nearby outlet. During and after the drilling, excess water will be discharged across grass and away from local water sources. This is to minimise any adverse environmental effects and avoid water contamination.

Examples of borehole samples from the C2P project

Machine borehole in action at a property in Piarere