



Project Martha Community Meeting

THURSDAY 27 AUGUST 3.00PM EDUCATION CENTRE

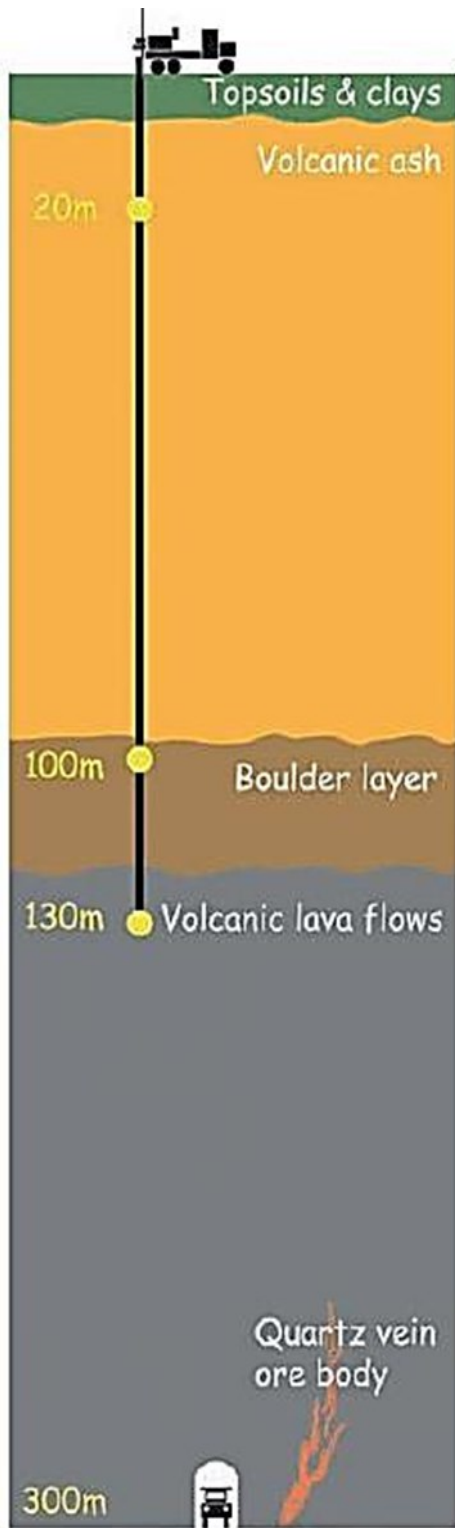
Project Update

The aerial photos on the left were taken in early June. There is not much new to see on the surface, but there is a lot happening underground. As you can see from the map at the bottom of the page, we plan on being busy in a number of areas over the next month. The next Community Meeting is planned for Thursday 27 August. We will provide updated project details at that meeting.

What you will be able to see on the surface is a drill rig on the corner of Kenny Street and Gilmour Street in the Baptist Church carpark. This rig will be on this site for about 10 days at the beginning of July to drill a piezometer hole. This is one of our consent conditions. On *Page Two* we explain what a piezo hole is and what it is used for.

Mine Development Plan Published at the start of each month as required by the Project Martha Conditions of Consent.





Above: a typical piezo hole. A hole is drilled down, in this example to around 130 metres. Piezometers are then installed at different depths down the hole and connected by thin electric cables to a data logger on the surface. All of the measurements recorded by the data logger allows us to determine the level of

Piezometers

What is a piezometer? | Piezometers (*pee-zom-ee-ters*), or *piezos* for short, provide us with information about water tables. We use two different types of piezos; both are located in a vertical drill hole about the same diameter as a large coffee mug. The simplest piezo is essentially a pipe with a cap on the top. Gravel is placed around the bottom of the pipe and the remainder is lined with grout. The water level is measured by removing the cap and lowering a long tape measure down into the hole. The tape has a sensor attached to it. When it touches water the sensor sends a signal and the depth is read off the tape.

The second type of piezo may be deeper, and is used to measure several water tables within the rock. Three or four piezos may be placed in the hole at different depths before the hole is completely sealed with grouting. Each piezo is connected by a wire to a data logger on the surface. The data logger is a small box that can be attached to a fencepost and the wires will be run to it underground, so once the system is in place there is very little to see on the surface. To read the information we simply plug a laptop into the data logger.



Above left: The flush cap of a piezometer hole in the carpark at St John's Anglican Church at the top of Seddon Street.

Above right: Tape measure and piezometer sensor.

What do piezos measure? | Piezos measure water pressure. This reading allows us to determine the water level of each water table above the mine. There can be three or four distinct water tables in the area, each usually separated by a clay layer which prevents water travelling between them. In Waihi, for example, we have recorded four separate water tables between 12 and 156 m below the surface.

Why do we need piezos? | Consent conditions requires a groundwater and settlement management system. Part of this system is a piezo network which provides regular groundwater levels. Accurate and regular monitoring of groundwater levels in all water tables above the mine is an important part of mine management.

Why are water levels important? | Water tables are part of the structure of the ground below our feet. Without water present, soils and clays can compress and shrink. Add water and they expand. We need to make sure that our operations do not have an adverse effect on water tables which could then result in any potential differential ground settlement. In addition, bore owners take their supplies from the water tables nearest the surface. We need to ensure that our activities do not have any effect on these.