

## Geothermal Pipelines

Geothermal energy is clean, green and fully renewable and the process of geothermal energy generation is fascinating. In this fact sheet, you can find out more about geothermal pipelines planned for the Te Ahi o Maui geothermal project in Kawerau.

Any geothermal power plant requires a network of pipelines to transport geothermal steam and water around the site. While the final design of the Te Ahi o Maui plant is not yet decided, the pipeline network will be similar whichever design is chosen.

### Pipeline location and surrounds

The pipeline route will be planned to suit the terrain. It will avoid all existing buildings and significant cultural and natural features on the Kawerau A8D Ahu Whenua Trust land and, where possible, it will follow existing tracks and roadways.

Pipeline routes are approximately 10 metres wide and incorporate a gravelled road. This road is to allow for vehicle access and to enable regular inspections and maintenance activities. The pipelines may run for distances of up to several kilometres. The pipelines and road will not be fenced after construction, providing ease of access and allowing for potential grazing.

### Pipeline design and construction

All pipelines for geothermal fluid and steam are made of welded steel and can be from 300mm to 1200mm in diameter. The pipes are insulated with a thick layer of fiberglass or mineral fibre insulation. The thick insulation is there to reduce losses in steam and fluid temperatures and to avoid any danger from hot pipework. The pipes are covered in an aluminium cladding to provide protection against potential damage and the weather. Bends and loops in the pipelines are necessary to allow thermal expansion of the pipes.

Pipelines that carry only steam have devices on them called 'condensate pots'. These allow any small amounts of condensed water that collect on the pipes to be drained away at regular intervals along the line. This small amount of condensed water is very clean and can be drained directly into the ground.

### Production well pipelines

Pipelines that connect the power plant to the production wells, which carry the extracted geothermal

steam and water directly out of the ground, are built to withstand extremely high temperatures – as high as 270 degrees Celsius (°C). These pipelines will include thick thermal insulation, drains, vents, control valves and instrumentation.

### Reinjection pipelines

Reinjection pipelines connect the power plant to the reinjection wells. By the time the geothermal fluid exits the power station and enters this pipeline, it has cooled to about 80-120°C. Though these pipes still need to be insulated, it is not to the same extent as the pipeline entering the power station from the extraction well.



*Pipelines all run about one to two metres above the ground and are held on support structures concreted into the ground.*

### Pipeline strength

Geothermal pipelines are designed and built to international and New Zealand standards. They are thoroughly inspected and tested before being put into service. Not only can they withstand high temperatures and pressures, but also uncommon events such as earthquakes and high winds. They are also capable of withstanding impacts from stock and vehicles.

### Questions? Please contact us

The Te Ahi o Maui Geothermal Project is a partnership between Eastland Group Ltd and Kawerau A8D Ahu Whenua Trust.

For more information:

Visit [www.taom.co.nz](http://www.taom.co.nz) or call 07 308 2574

