

Ground Source Heat Pump Association Webinar Series 2020

Closed Loop Borehole Design #1

Or Why 656m \neq 656m

11th June 2020

Closed Loop Borehole Design #1

- ▶ Why 656m \neq 656m!
- ▶ What is important and what we can adjust
- ▶ The limitations and compromises of the MCS Lookup Tables

So why does 656m \neq 656m?

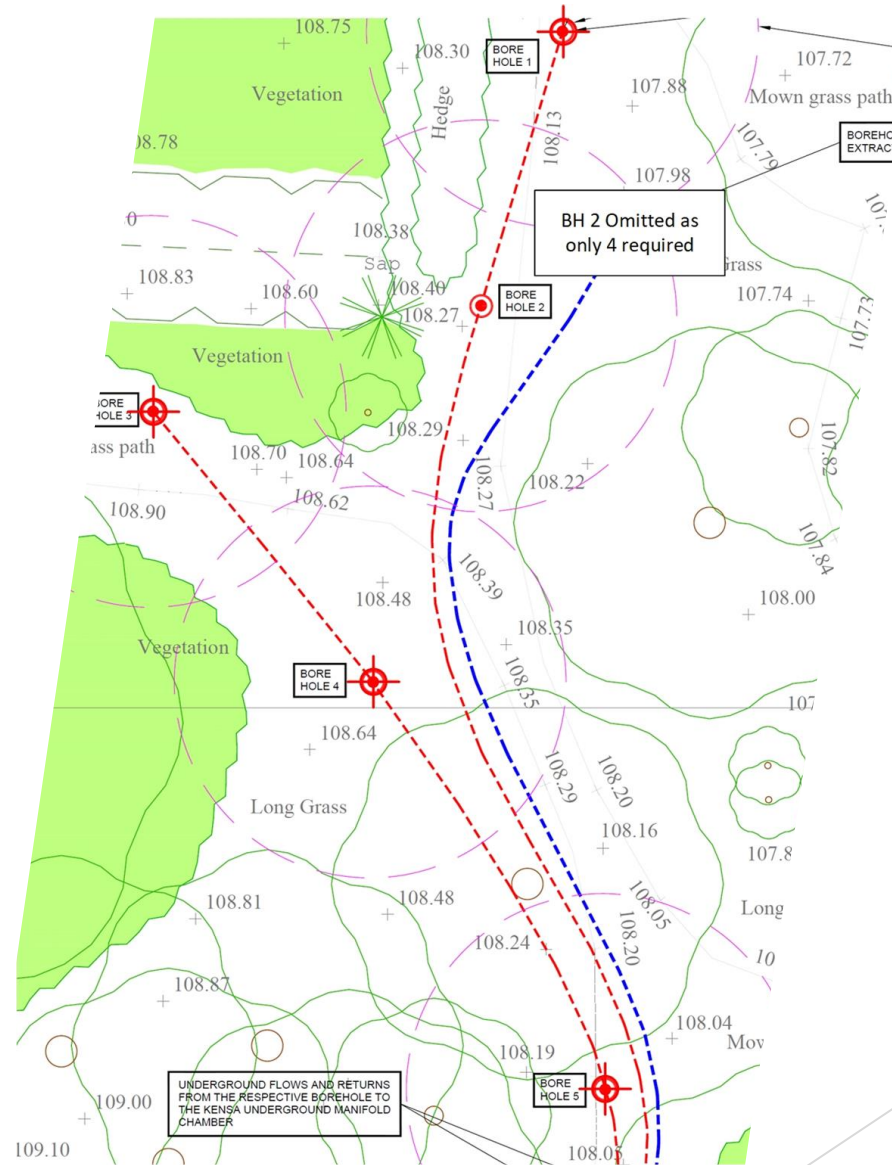
Ground loop design software allows an enormous amount of control over all aspects of a design....

And they ALL make a difference!

- ▶ Ground Temperature
- ▶ Thermal Conductivity
- ▶ Thermal Diffusivity
- ▶ Design Life
- ▶ Long Term Temperature Changes
- ▶ Fluid Properties
- ▶ Flow Rates
- ▶ U-Tube Diameter & Placement
- ▶ Borehole Diameter & Grout
- ▶ Hydraulic Configuration
- ▶ Borehole Layout
- ▶ Including Plotted Irregular Layouts

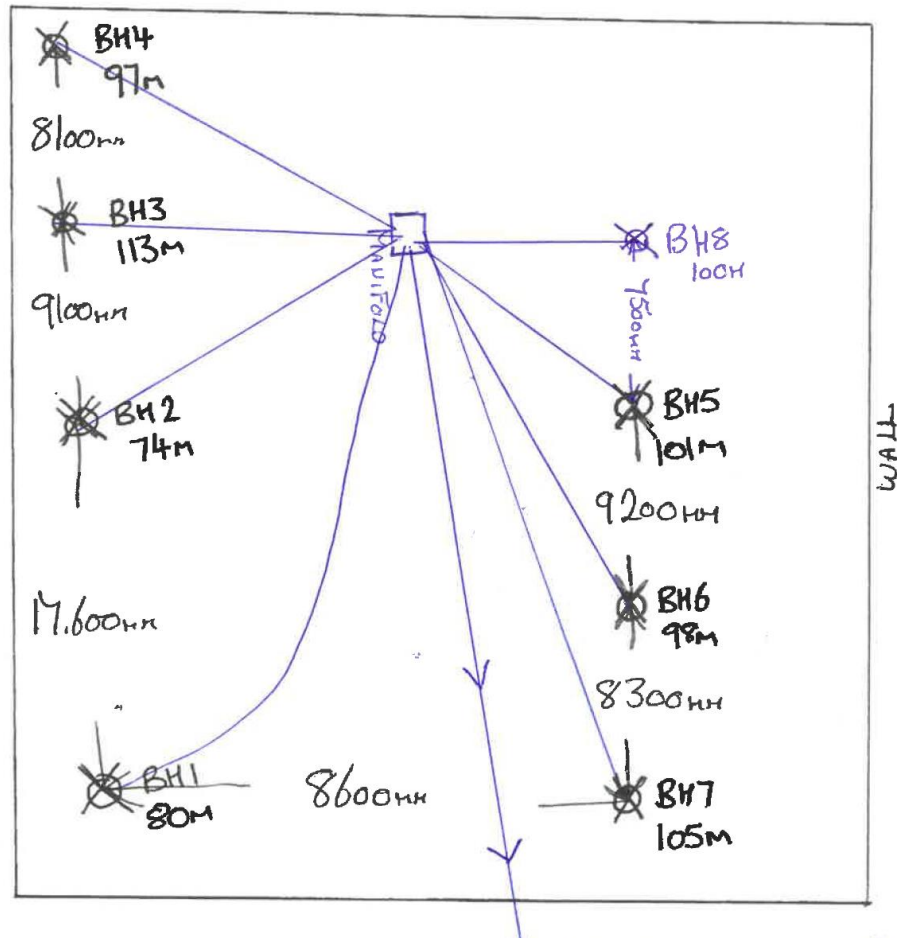
So why does
656m \neq 656m?

► Borehole Locations for example



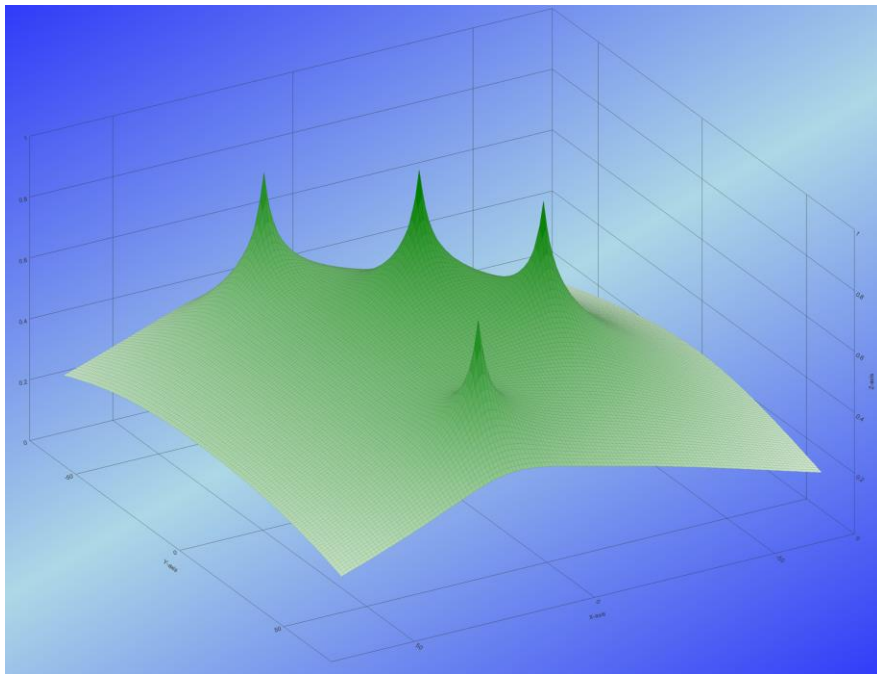
So why does 656m \neq 656m?

“Your report said 656m and that’s what we installed Mate!”

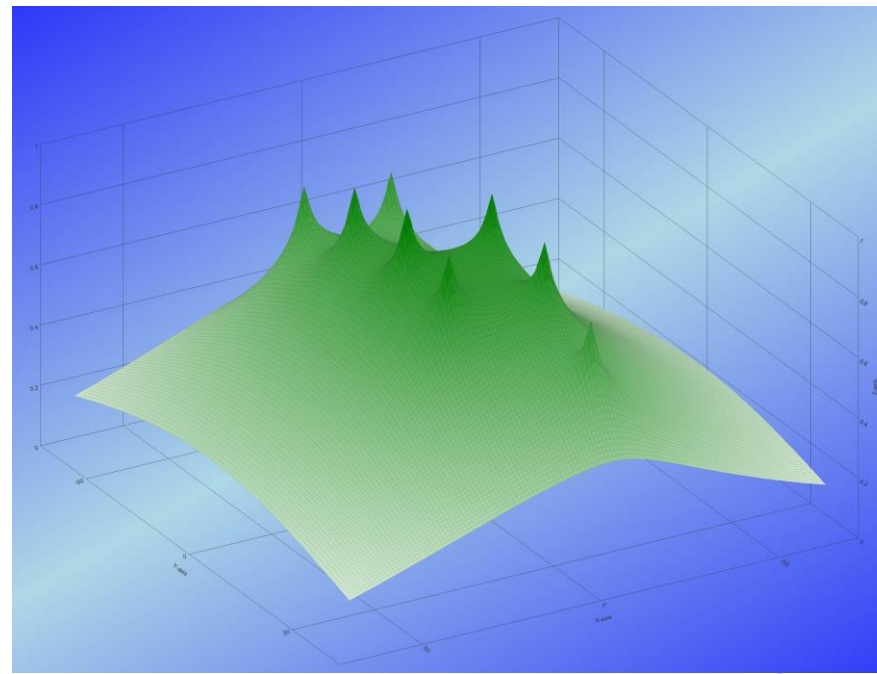


So 656m = 768m

Original Design - 656m



As Built - 768m



What is Important & What Can We Adjust?



It's ALL Important



We can adjust anything but....



It all has consequences and some of them may impact project economics and viability dramatically

A Word or Two on The MCS Tables

- ▶ Read and stick to the small print at the top it's really important!
- ▶ Don't and I really mean DON'T use them inappropriately,
 - ▶ Building type or size (30kW Houses)
 - ▶ Unrealistic Conductivity
- ▶ Recognise that they are inherently compromised to fit as broad a range of projects as possible
- ▶ The tables won't warn you of geological hazards
- ▶ Finally recognise that the cost of a professional (and warranted) design is very often less than the savings....
- ▶ And certainly less expensive than a problem installation

Questions.....

and thank you
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