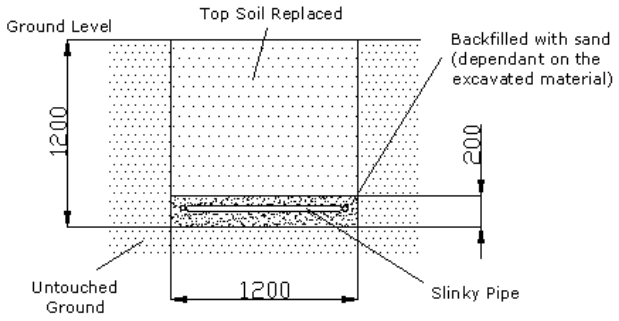
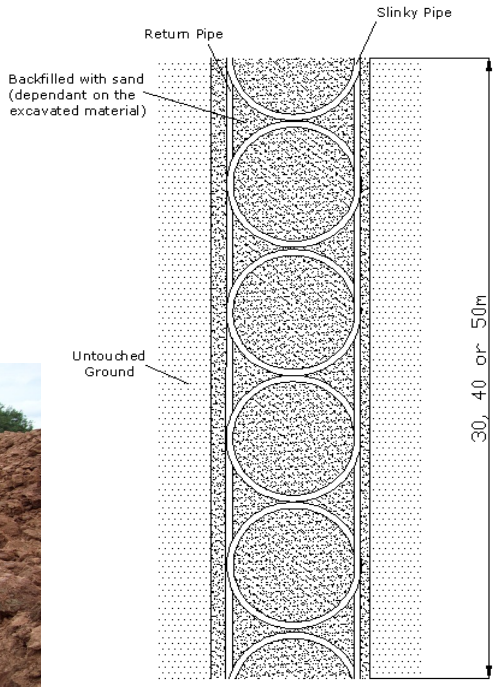
Slinky Installation

Ground source heat pumps absorb energy from the ground via buried heat exchangers.

Kensa recommends the use of slinky ground arrays as they are the most cost effective way of installing ground arrays due to the fact that they reduce the amount of digging required. They can be installed on their edge vertically or laid flat in the bottom of a trench horizontally.





Horizontally installed slinkies

Facts at a glance:

Horizontal Slinky Trenches—should be placed in a 1.2m wide by 1.2m deep trench.

Vertical Slinky Trenches—should be placed in a 300-400mm wide by 2m deep trench.

Separation Distances—each slinky trench should be separated by a minimum of 5m between centres. Straight pipe 1m between centres.

Backfilling—trenches should be backfilled with sand over the slinky if the excavated earth contains sharp flints or large clods of earth.

Energy Absorption—for every 10m of slinky 1kW of energy can be absorbed from the ground.

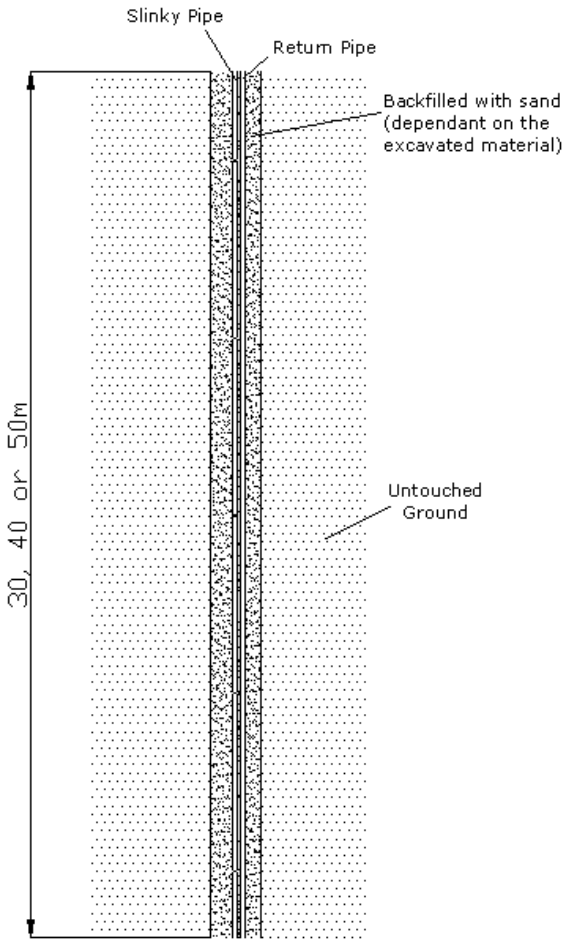
Trench Layout—trenches do not have to be straight, they can twist and turn as long as the 5m separation distance is maintained.

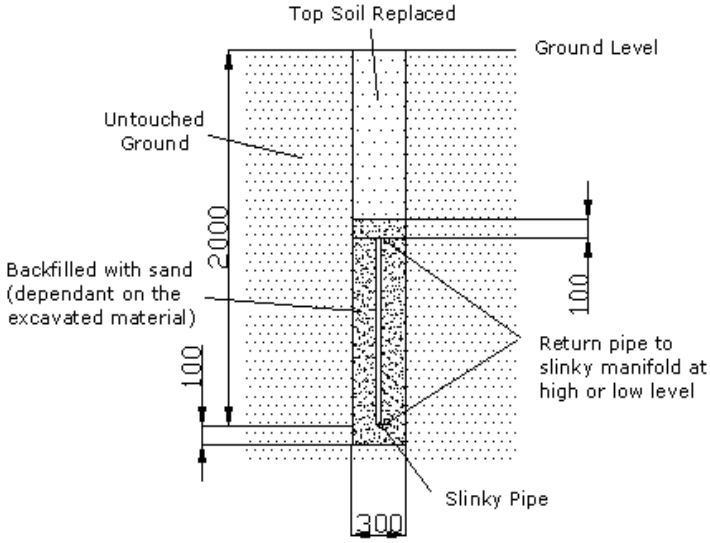
Slinky Installation

The slinky, and its return pipe, is placed in the trench and carefully backfilled with the excavated material, graded to remove any large or sharp stones. Where the excavated material consists of large clods (which might leave air gaps around the pipes resulting in poor heat conduction) or sharp flints (which could damage the slinky pipe) then sand should be used to backfill until the slinky is covered, after which the excavated material can be used.

Pea gravel should only be used in slinky trenches which are being used as soakaways and only after the slinky trench has been approximately half filled.

Full trench not shown for clarity

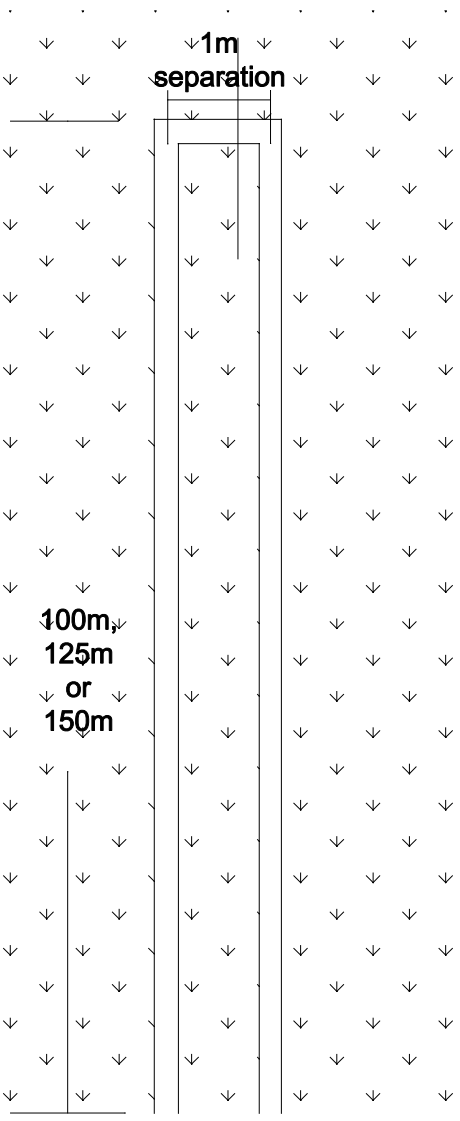




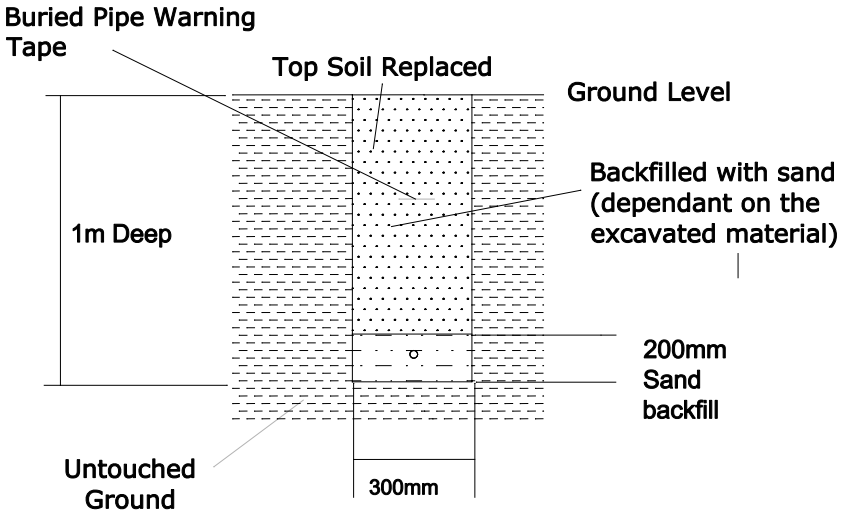
Straight pipe installation

As an alternative to slinkies, straight pipe can be used as the ground array. These are slightly more efficient than slinkies however the cost and additional digging required far outweigh any efficiency gains made. The amount of digging can increase by up to 5 times and hence the cost of installation. There is no difference in the amount of ground required as the energy source, for slinkies or straight pipe. Trenches do not have to be straight, they can twist and turn as long as the 1m separation distance is maintained.

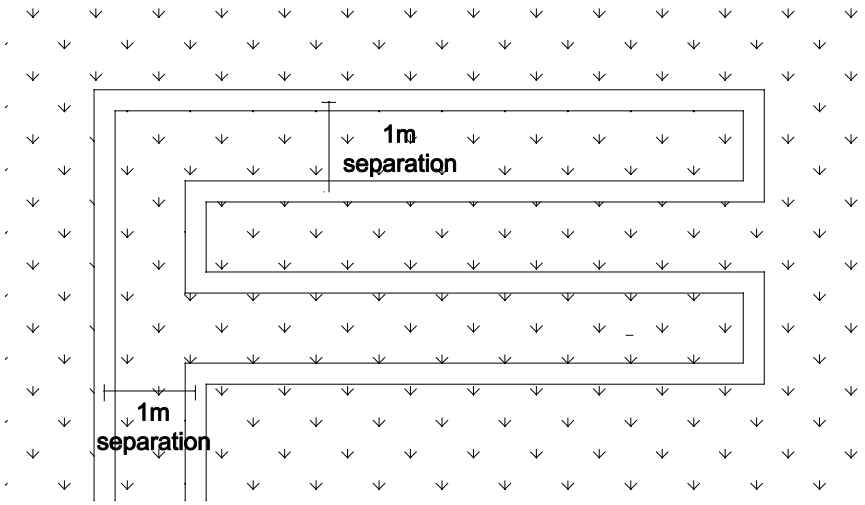
Kensa heat pumps can work with both types of ground array and we can supply both. However due to the advantages of slinkies we would always recommend these.



Plan of straight pipe layout

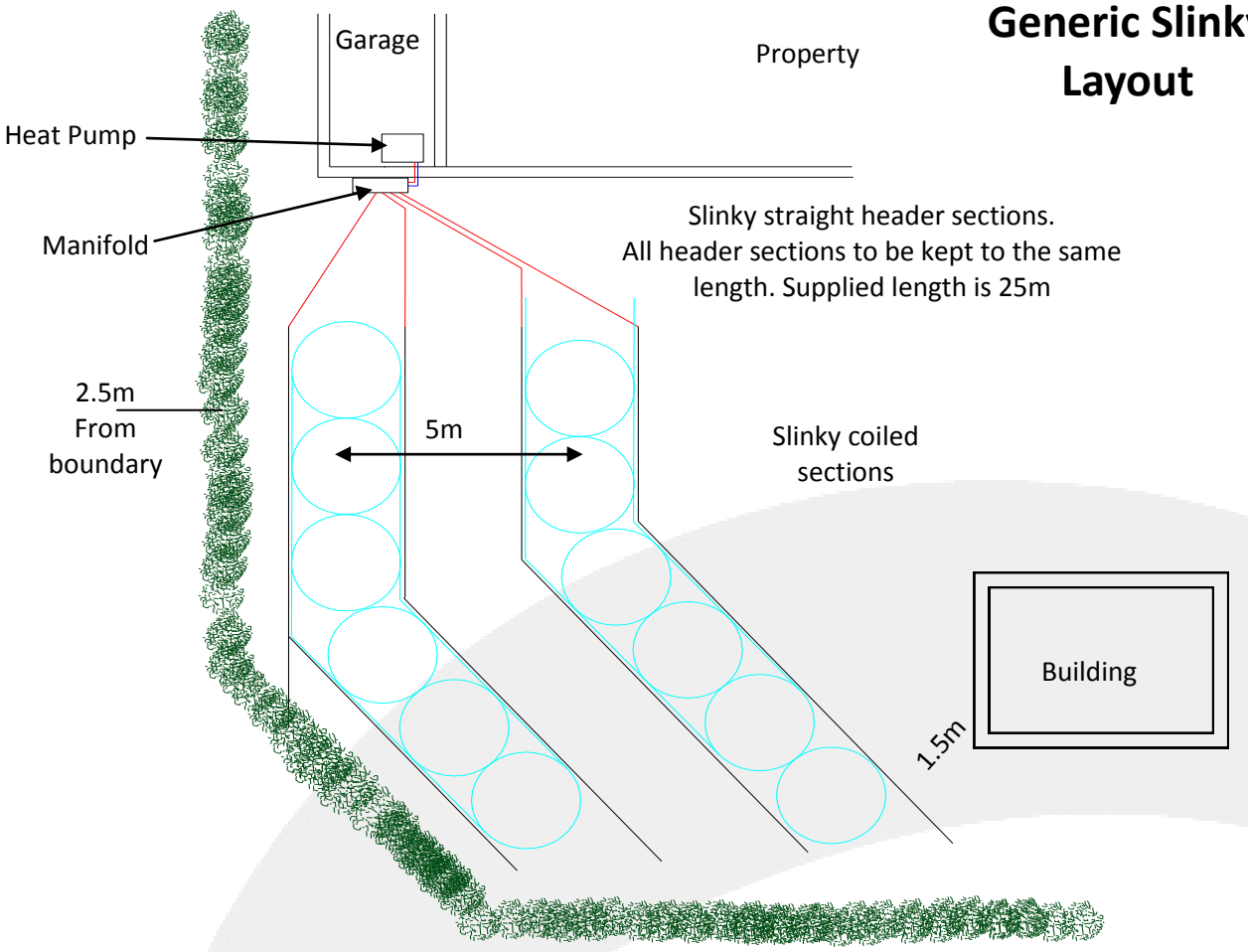


Cross section of single pipe trench



Alternative plan of straight pipe layout

Slinky Installation



Slinky Layout

The coiled section of the slinkies should be installed with a minimum of 5 metres between each slinky trench centre. This separation distance should be maintained at all times, even if the slinkies bend or turn back on themselves.

The straight header sections of the slinky (in red on the drawing above) should be kept the same length to ensure equal flow through each slinky. This can be achieved by coiling any excess header pipe back into the header trench. It is possible to combine the header pipes into the same header trench. However it is advised that the flow and return pipes are run down either side of the trench.

Slinkies should be placed at a minimum of 2.5m from property boundaries and 1.5m from buildings. Slinkies should be unrolled next to the trenches and it is advised that the return pipe is cabled tied to the coils to improve the rigidity and aid manual handling. (Please see the Slinky Installation Guide for further details).