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GROUNDHEAT

# Ground Heat

## A Natural Way To Heat Your Home

With traditional energy sources in rapid decline, added to the consequential cost of heating our homes continuing to rise, every effort is being made to develop innovative natural energy solutions that do not rely on our ever depleting fossil fuels supply.

One such solution is ground source heat pump technology, a new and effective way of using the natural energy stored in the earth to heat our homes.

With over 35 years' experience in the heating industry, Ground Heat are well placed to offer ground source heat pump technology.





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# Ground Breaking Heat Technology

## Benefits of ground source heat pumps

- Reduces your carbon footprint
- Provides space heating and hot water
- Doesn't rely on fossil fuels
- Lowers your fuel bills



Ground source heat pumps are revolutionising the way we heat our homes forever. Designed to unearth energy from the ground, collectors buried in your garden extract heat then transfer it seamlessly to radiators, under floor heating systems and hot water taps.

Expertly installed by Ground Heat, a ground source heat pump delivers a natural, cost effective way of heating an entire household – replacing the need for a boiler. It provides you with all of your heating and hot water requirements.

### We Take Care of Every Stage

At Ground Heat we have a proven reputation for designing, installing and maintaining ground source heat pump systems. We manage every phase of the process from initial conception through to installation.

At the outset a consultation to calculate your energy requirements, architectural constraints and viability of the project is conducted. Following this a site survey of your property detailing our recommendations is supplied to you.

Next, depending on the size of the property and nature of the geology, a design for either space saving vertical or horizontal ground loop collectors is recommended. Then our team of proficient engineers will install your ground source heating system to the highest standards.



### After Care Service

Ground Heat works closely with several well known manufacturers who offer a seven year guarantee on their units. We offer a two year insurance backed guarantee on our workmanship through RECC (Renewable Energy Consumer Code). After your guarantee expires we can then offer a low cost maintenance agreement for an annual service.





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# The Benefits of a Domestic Ground Source Heat Pump



- could lower your fuel bills, particularly if you replace conventional electric heating/oil/solid fuel
- could provide you with a financial incentive through the government's Renewable Heat Incentive (RHI)
- could lower home carbon emissions, depending on which fuel you are replacing
- no fuel deliveries needed
- can provide you with all of your heating and hot water requirements
- minimal maintenance required

## Is a Ground Source Heat Pump Suitable For My Home?

- **Is your garden suitable for a ground loop?**  
It doesn't have to be a large garden, but must be suitable for digging trenches or boreholes with accessibility for digging machinery. As a general rule of thumb, if you can get two of your houses into your garden then you should have enough space.
- **Is your home well insulated?**  
For the heat pump to be effective your home must be well insulated and draught proof.
- **What fuel are you replacing?**  
The heat pump will pay for itself much more swiftly if it is replacing an electricity, oil or solid fuel heating system.
- **Is the system intended for a new build?**  
Merging the fitting with other building work can reduce the cost of installing the heat pump and associated works.
- **How much will it cost?**  
To fit the system will cost on average £11,000 - £15,000, with running costs depending on the size of your home and quality of insulation.
- **How much will I save?**  
Savings will vary subject to which system you are currently using and whether you are eligible for the renewable heat incentive (RHI)
- **What maintenance is required?**  
Heat pumps have a warranty of seven years, with an annual check recommended by manufacturers. Workmanship is covered by a two year warranty and insurance backed by an approved MCS provider.

# How It Works

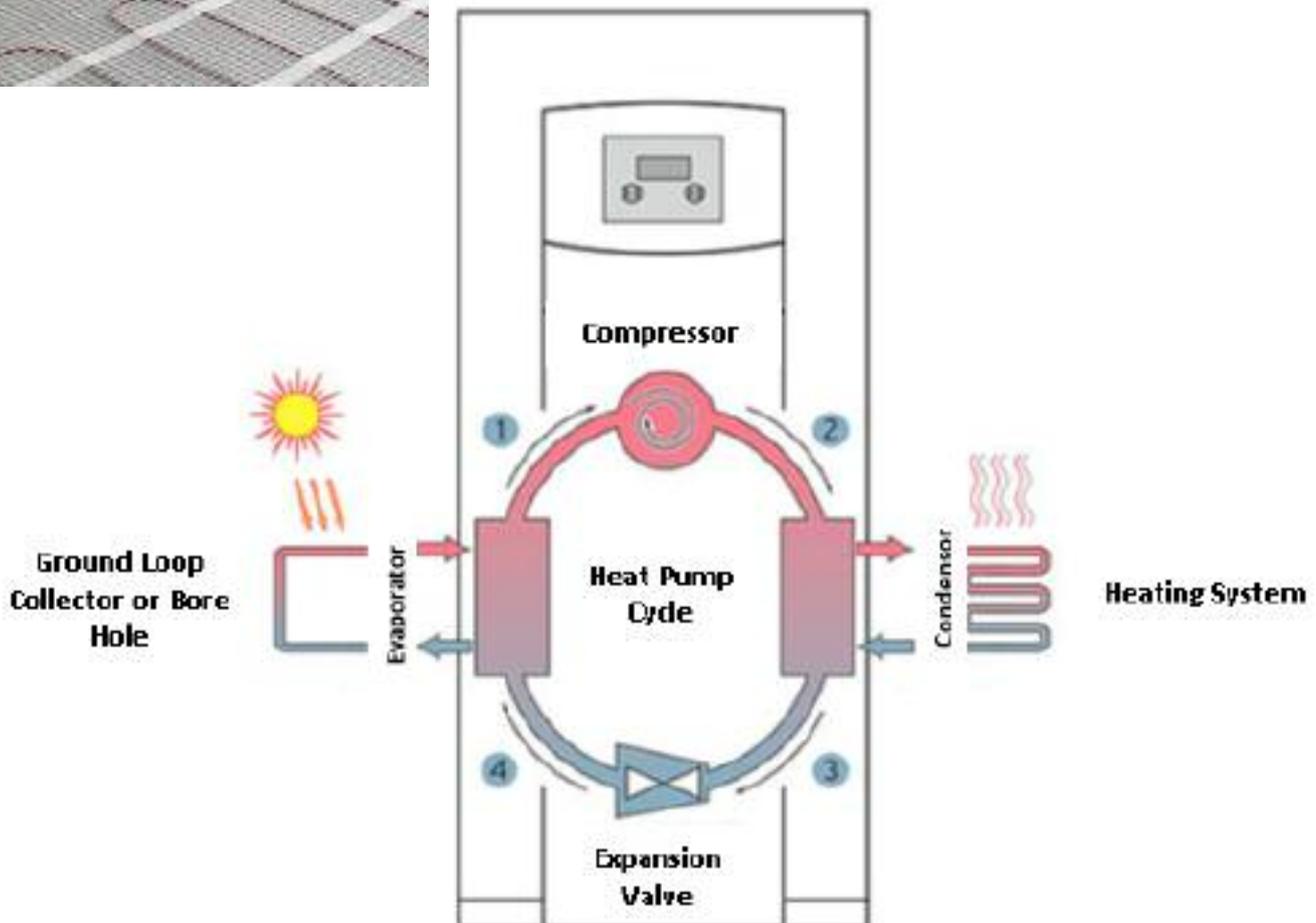


Pipes concealed in the ground extract the heat in the earth allowing the ground source heat pump (GSHP) to distribute it around your home via radiators, underfloor and hot water systems. Working on a similar method to a refrigerator a ground source heat pump circulates antifreeze in the pipe work, absorbing heat into the liquid in a continuous process, therefore raising the temperature in order to deliver all the warmth necessary for domestic dwellings.

As the ground stays at a constant temperature, the heat pump can be in operation all year round. This may be costly you may ask, however, heat pumps deliver heat at lower temperatures over a longer period of time. This is a more efficient way than gas or oil boilers which switch on and off accordingly.



The sum of heat you require for the size of your property determines the length of the ground loops, but if space is scarce bore holes can be drilled vertically into the ground. The loop system is laid flat in trenches roughly 1.4m deep whereas bore holes run to a depth of up to 200m for a domestic property. Heat pumps do require electricity to work but this doesn't exceed the benefits.





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# Passionate About Heat Pumps



Ground Heat Installations, established in September 2006 provides a nationwide design and installation service with its base in the North West of England. The company is the vision of David Thompson, Director and Owner, who has over 35 years experience in the plumbing and heating industry. Whilst on a call out to diagnose a fault on a heat pump he discovered the versatility of ground source which ignited a passion for this advanced technology.



This chance encounter triggered a memory of his father explaining to him that one day people would extract heat from the ground to heat our homes. This generated a strong passion for ground source heat pumps and lowering fuel costs. Over time a keen interest evolved into a company and Ground Heat is recognised as a market leader receiving many national industry awards. Initially Ground Heat concentrated on domestic installations then developed specific concept designs for social housing to combat fuel poverty.

As a pioneering business, Ground Heat works hard to ensure that we deliver a personalised service consisting of the highest quality workmanship, skills and professionalism. Our heating engineers are all highly qualified installers, flexible and committed with a passion for ground source. Ethics are high to guarantee the best results possible for our clients with enthusiasm, dedication and a considerate manner.



## Accreditations

We are fully accredited with the Microgeneration Certification Scheme (MCS) for heat pump and solar thermal technologies, which is acknowledged nationally to safeguard the quality of renewable energy installers. It is also reinforced by the Department of Energy and Climate Change. An annual inspection is statutory, ensuring that we have the highest standards in installation and customer service. This also means our customers are entitled to apply for the Government's financial incentive known as the Renewable Heat Incentive (RHI) which has been extended to 2021.

As part of the Renewable Energy Consumer Code (RECC) we adhere to an agreement to deliver outstanding service to our clients. This code is supported by The Trading Standards Institute.



We are members of the Ground Source Heat Pump Association (GSHPA). David Thompson is a member of the council which works closely with DECC to ensure that the ground source heat pump industry achieves the highest standards and remains highly regulated.

Membership of the Greater Manchester Chamber of Commerce also assists Ground Heat to stay connected to and part of the business community.

# Clifford Lamb Court Case Study



## Clifford Lamb Court – Charlestown, Greater Manchester

A 1960's tower block of 58 flats drew the attention of Ground Heat when Northwards commissioned us to install a ground source heat pump system for a more energy efficient and cost effective solution to an aging gas plant on the roof of the building. Not only did Northwards require a system that met the needs of the tenants today but a future proof provision for the property. A project on this scale had never been attempted before in the UK.

The skills and resourcefulness of the director, Dave Thompson, were realised when the bespoke design process commenced. Due to the nature of the building being high rise the specification of the heat pumps had to be small, but this had never previously been attempted. Dave collaborated with Vaillant to manufacture the 3kW heat pump. This was the best solution as it can be used in individual properties and as the heat pump is wired directly into each consumer unit tenants only pay for the energy they use.

As specialists in the field, we designed and installed two brine risers from the ground to the top floor with manifolds to link each singular flat. A unique bore field configuration was calculated to exploit energy efficiency to the maximum. This guaranteed a higher coefficient of performance (CoP) per annum. During the ground works, gas and electrical pipe work was uncovered, but with vigilant precision we were able to implement the works successfully. Unvented hot water cylinders provide the building with enhanced hot water pressure and cooler corridors in warmer weather.

Through the implementation of this scheme Clifford Lamb's carbon output per annum has been reduced from 97 tonnes to 52 tonnes. Occupants' energy bills have been reduced collectively saving £6,804 per year. The operating costs for Northwards Housing has also been reduced to £250 per annum.

As this project entailed major investment and challenges it was paramount that we at Ground Heat met the needs of the clients and residents. With the ability to adapt quickly, we problem solve and evolve in order to advance as market leaders in the ground source heat pump industry.





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# Duncan Edwards Court Case Study



## Duncan Edwards Court, Northwards Housing - Manchester

As fuel poverty is a growing concern amongst the elderly, we at Ground Heat decided to pioneer the idea of installing ground source heat pumps and auroTHERM solar thermal into sheltered accommodation.

The 11 room residential care home previously comprised of three 80kW cast iron gas boilers. Each apartment had an individual domestic hot water cylinder supply, fed from the boilers.

A concept designed by Ground Heat to reduce the stored volume by 700 litres to a communal store of 300 litres, with the addition of a secondary hot water circulation system throughout the building to serial fed radiators (the first in the UK) approximately delivers 10.5% savings in energy costs. A backup boiler has been installed to ensure the system is pasteurized once a week, raising the temperature from 56 to 65 degrees for an hour.

A monitoring system fitted to the new installation has shown savings not only in cost but also energy output. Duncan Edwards previously produced around 300,000 kwh per year in keeping residents in heat and hot water. The existing gas bills were £9,800.00 per year.

The new system now costs under £5,000.00 per year to run and the energy input per annum is now 160,000kwh.

Over 20 years the projected lifetime fuel cost saving will be £19,661 with an RHI cash back of £148,524. This means over 5.5 years the system pays for itself. Ground Heat is a firm believer in utilising a natural resource with innovative technology to abolish fuel poverty permanently.

Although the name looks back to a past era of the Munich Air disaster, the building itself has been transformed into a vision of the future through the forward thinking of the project manager, Bernard Turner, who with the guidance of Ground Heat's Dave Thompson had the foresight and determination to drive this project forward and to realize this innovative integration of renewable heating technologies.



Commercial ground / water source  
installation of the year

### Bernard Turner

*Principal Mechanical Engineer, Northwards Housing*

"We're extremely pleased with the installation and its performance so far. The success of the project is even starting to serve as a shining example of the benefits of renewable technologies, as we're now attracting interest from housing associations and councils across the UK who are considering similar measures."



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# Shepway Court Case Study



## Shepway Court - Salford

As Ground Heat is the leading provider of bespoke commercial ground source heat pump design and installation solutions, Shepway Court's 40 units fitted in September 2013 were a cause of celebration for its residents. The original 1970s' gas boilers saw the inhabitants constantly cutting back on the amount of energy they used in order to save money, so when the old system started to fail City West Housing Trust decided to be intrepid.



Due to the efficiency and reliability that ground source provides, in addition to being energy efficient and environmentally friendly, City West Housing Trust commissioned Ground Heat to drill 12 boreholes at a depth of 150 metres. These were connected to the heat pumps located in the plant room, which in turn were linked to each unit's radiators and hot water supply. Tenants control their room temperature using individual thermostats. In addition, a 42 kW solar PV panel was fitted to subsidise the electricity needed to operate the heat pump, once again to reduce costs. An 80kw gas boiler was also fitted to provide pasteurisation. The heating medium circulates through all of the cylinders 24/7 throughout the building, giving a stored hot water supply of 48/50 degrees through the taps, reducing the overheating of the building.

Before we submitted our proposal for the installation of a GSHP plant at Shepway Court we spent many hours with the housing association deliberating over how the existing system was operated. We had to take into account the elderly residents' needs. The occupants are often up in the late hours, so heat on demand was vital, as was a requirement for 24 hr domestic hot water supply to each apartment. The inconvenience for the residents was kept to a minimum as the installation took 2 months to complete. Old radiators were upcycled allowing the controls to remain the same. Likewise, training was provided to permit tenants to optimise the system and the warmth it affords.



On average with the gas boiler system, tenants were paying £345 per annum for heating and hot water. Electricity was separate. Now, billed through their electricity provider the average costs for heat and hot water are £260 which equates to over a quarter saved on running costs combined with a 25 year life expectancy.



Due to the Renewable Heat Incentive (RHI), City West Housing is receiving payments of £15,684 per year which are made over 20 years to reflect the amount of energy used as a substitute of fossil fuels. Therefore City West Housing Trust is in line, by 2033, to receive more money than it paid out to install the ground source system.

### Gary Vaughan

*Head of Supply Chain and Sustainability*

"Over the past several years, we have learned that there is no one system that is a silver bullet, so it's worth taking the time to assess each property on its own and make educated decisions."

As Ground Heat designs individual tailored systems we can deliver a personalised specific package to suit many large housing properties, cutting cost and significantly reducing CO2 emissions.