GROUND SOURCE HEAT PUMPS AND SHARED GROUND LOOP ARRAYS

Kensa Contracting
A KENSA GROUP COMPANY

The UK's leading ground source heat pump manufacturer and installation contractor

Our aims

Decarbonise heat the Scottish Economy

- 75% reduction in emissions by 2030, Scotland Net Zero by 2045
- £1.4BN of low carbon funding announced by S. Gov 1st September 2020
- Building standards will be tightened to ensure that new homes use renewable heat from 2024.
- Scotland's electricity grid 90% (2019 figures) decarbonised due to the huge growth of onshore wind in the last 10 years offering considerable potential for heat and transport decarbonisation through electrification.
- 80% of domestic energy use is heating and hot water

Reduce fuel poverty in rural and urban communities

- Currently 25% of Scottish household are in fuel poverty. 7% of Scottish households are in extreme fuel poverty

Provide a simple, effective and low maintenance solution to achieve decarbonisation of heat and alleviation of fuel poverty

Funding opportunities in Scotland

- Scottish Government Social Housing Net Zero Fund
- This LCITP fund will target total investment of £20 million, provided through a blended model of capital grant funding with loan funding available as partial match.
- The fund will aim to support projects that can accelerate the deployment of low carbon heat in existing social housing, particularly through the installation and/or use of heat pumps. Registered Social Landlords (RSLs), Local Authorities and Energy Service Companies (ESCOs) are eligible to apply.
- Applications can be submitted between 1 September 2020 and 18 December 2020.
- Applicants can also apply for a 30% unsecured loan at 3.5% over 15 years
- Projects must be commissioned by 30th November 2021

Funding opportunities in Scotland

- Scottish Government Green Recovery: Low Carbon Energy Project Capital Funding Invitation announced on the 24th September 2020.

- For capital ready projects, support may be offered in the form of financial assistance for up to 50% of the total eligible capital costs of a project up to a maximum of £5 million per project, where capital costs covers financial costs associated with the build and installation of an exemplar project

Publication of Funding Invitation	24 September 2020
2. Webinars and applicant discussions	October and November 2020
3. Deadline for receipt of Expression of Interest Form	17:00 on 13 November 2020
4. Notification of EoI outcome	W/C 30 November 2020
5. Deadline for receipt of Final Application	17:00 18 January 2021
6 Independent Due Diligence	February and March 2021
7. Conclusion of Funding Offers	April 2021
8. Monitoring and Review	April 2021 – April 2023
9. Project Commissioned	April 2023

THE KENSA GROUP

- **Kensa Heat Pumps** remains the UK's only manufacturer of ground source heat pumps since 1999. It provides products and technical support to an extensive network of plumbing contractors.

- **Kensa Contracting** is a specialist ground source heat pump installation business which focusses on large-scale new build and social housing retrofit programmes. It benefits from unrivalled experience and expertise and has delivered the UK's largest installations in the residential sector. Kensa Contracting is the UK's specialist delivery partner for Fifth Generation District Heating networks featuring Ground Source Heat Pumps and Shared Ground Loop Arrays

- **Kensa Utilities** is an infrastructure asset company which funds, owns and maintains shared ground loops that serve ground source heat pump installations. It utilises subsidy support to provide these assets at zero cost to the housebuilder or social landlord.

www.thekensagroup.com

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KENSA CONTRACTING

INTRODUCING KENSA

Kensa Contracting has an award-winning heritage with thousands of successful installations in both retrofit and new build properties.

- Delivery of larger scale GSHP projects
- Turnkey project management solution
- Full or shared project management options
- Equipment supplied by Kensa Heat Pumps

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GROUND SOURCE HEAT PUMP TECHNOLOGY

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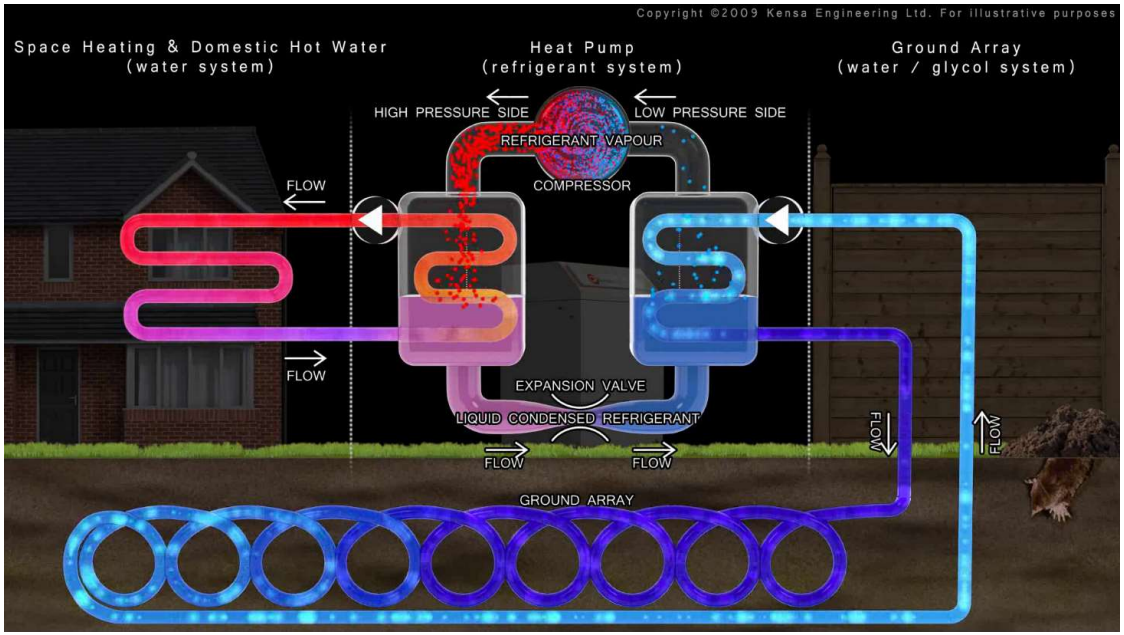
HOW A GSHP WORKS

The basics:

- Highly energy efficient space and water heating solution
- Electrically driven appliance
- Moves solar energy from the ground into the property
- Utilises ‘collector’ pipework buried in the ground
- Typically one unit of electricity produces between three and four units of heat
- Efficiency a factor of source temperature and water output temperature

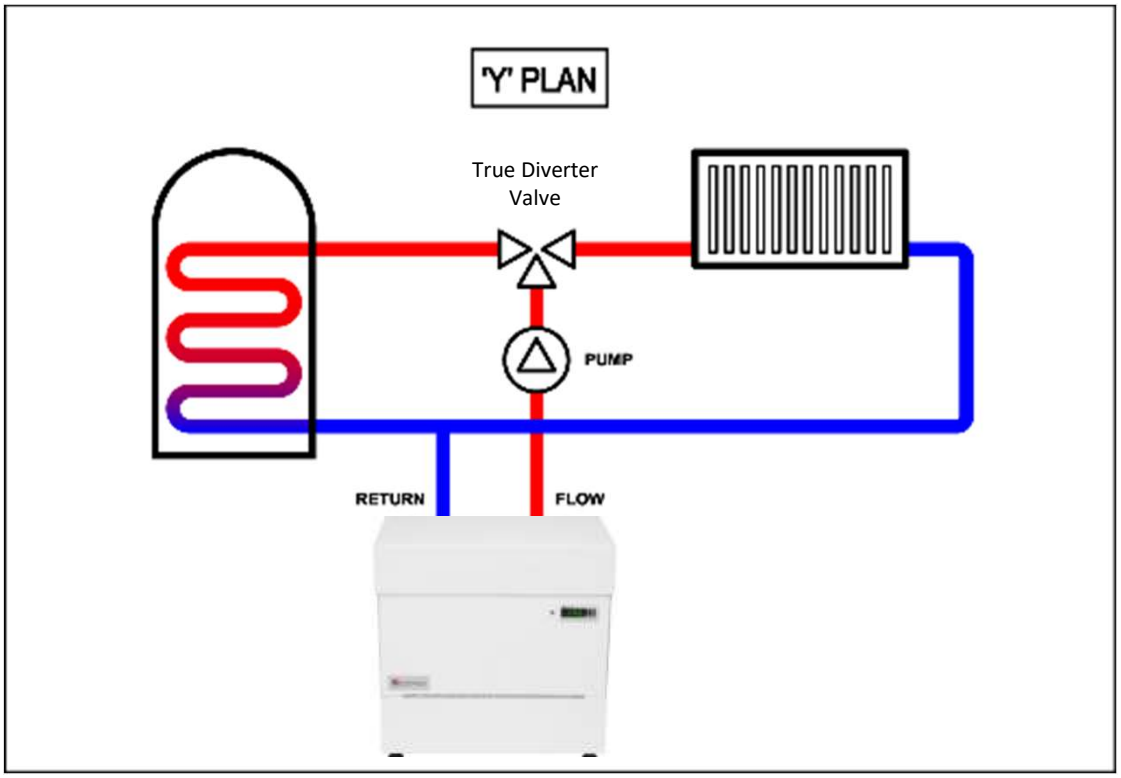


https://www.kensaheatpumps.com/how-a-ground-source-heat-pump-works/

HOW A GSHP HEATING SYSTEM WORKS

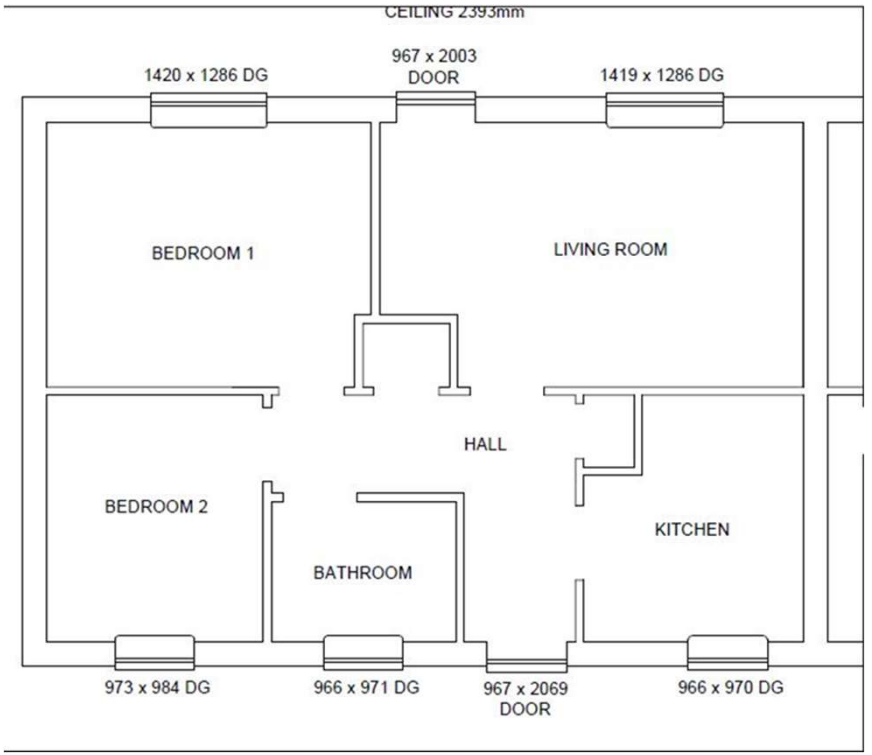
- The same way that a conventional boiler does
- Someone sizes the boiler (Heat Pump)
- Someone sizes the Radiators to work with the boiler
- Someone sizes the cylinder to work with the boiler
- The controls are the same heating controls
- With the ability to make them simple or complex
- Nobody worries about it not working when its cold

- THE ONLY DIFFERENCES ARE
  - Heat Pump (not boiler)
  - True Diverter valve (not mid position valve)
  - Supply from ground array (not gas supply)



SYSTEM SIZING

- Elemental heat loss calculation to BS EN 12831
- Heat loss carried out room-by-room
- Peak heat load sized to 99.6% external air temperature
- Size to 100% of peak load
- No backup required
- Size hot water cylinder depending on need
- Choose heat pump depending on high output or high temperature
- Borehole sizing based on peak load and annual load



OTHER METHODS OF HEAT EXTRACTION

Straight pipe

- Collector pipework laid horizontally
- Requires large land area
- Not that sensitive to ground type
- Can be oversized easily
- Cost effective
- Quick to install

Slinkies

- Pre coiled pipework laid in trenches 1-2m below ground
- Requires large land area, but less digging
- Not that sensitive to ground type
- Can be oversized easily
- Cost effective
- Even quicker to install

Surface water (closed loop)

- Ideal solution where surface water (e.g. lake) is available
- Uses pond mats featuring slinky pipe on steel frames
- Extremely efficient
- Cost effective
- Reduced maintenance compared to open loop

Aquifer or mine water (open loop)

- Extracts ground water from an underground aquifer or mine
- Efficient
- Costly to maintain
- Considerations need to be taken regarding corrosion issues, filtration and extraction

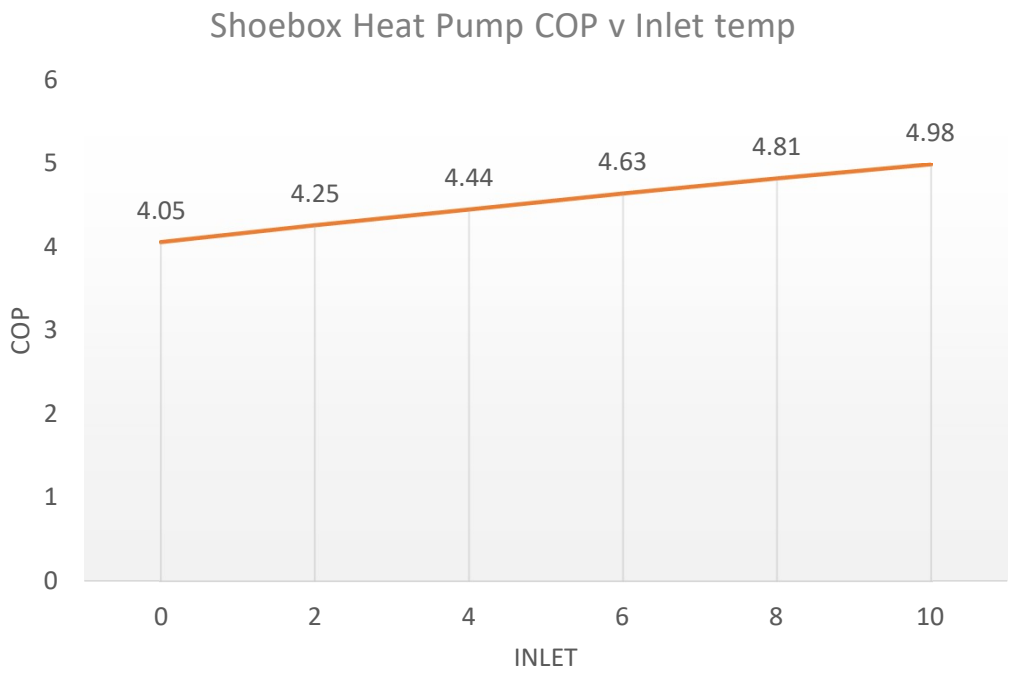
GSHP BENEFITS

In brief:

- Extremely low CO_2 emissions enabling easy carbon and building regulations compliance
- No point of use NOx or SOx emissions
- Lowest energy bills; slightly lower than air source heat pumps, LPG & oil
- Ultra-efficient and reliable
- Minimal service and maintenance costs
- 20 – 25 year heat pump unit life expectancy
- >100 year ground array life expectancy
- Ideally suited for time of use tariffs
- Completely unobtrusive – no visual impact

PERFORMANCE - OUTPUT

- Source temperature also has an impact on thermal output (kW)
- However, ground “source” temperature remains reasonable stable throughout the year
- MCS requires return from ground to be >0ºC
  - Sizing needs to be considered accordingly with heat loss
  - MIS3005
  - Kensa “Actual Output” sheets provide all required data



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PERFORMANCE - EFFICIENCY

Flow temperature also has an impact on efficiency (CoP/SPF)

SCOP Calculator

Use Kensa's quick tool to establish the SCOP* rating for your system.

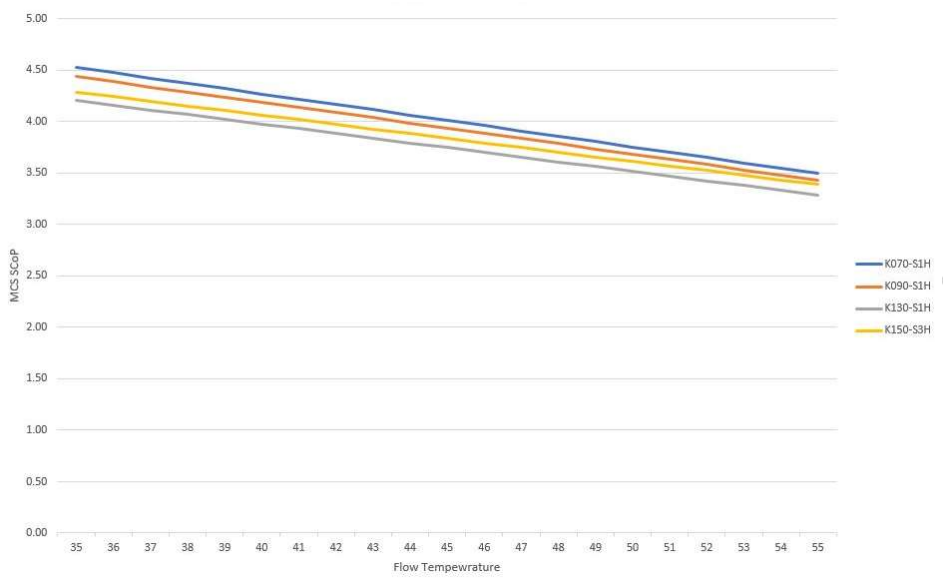
Select from the dropdown options

Heat Pump Model	K070-S1H
Space Heating Flow Temperature	40
Domestic Hot Water	Yes

Your results

Space Heating MCS SCOP	4.23
Domestic Hot Water MCS SCOP	3.04

MCS SCoP VS Flow Temperature



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GROUND SOURCE vs AIR SOURCE

Benefits	Ground source	Air source
More efficient	✓	✗
Lower carbon emissions	✓	✗
Lower running costs	✓	✗
Increased opportunity for night-time operation & load-shifting	✓	✗
Lower maintenance costs	✓	✗
Straightforward planning permission	✓	✗
No noise impact	✓	✗
Completely unobtrusive	✓	✗
Legacy value for subsidy spend	✓	✗
Ability to cool	✓	✗

LOW CARBON EMISSIONS

GSHP's & GOVERNMENT

The carbon intensity of electricity generation has fallen significantly with further major reductions forecast for the next few decades.

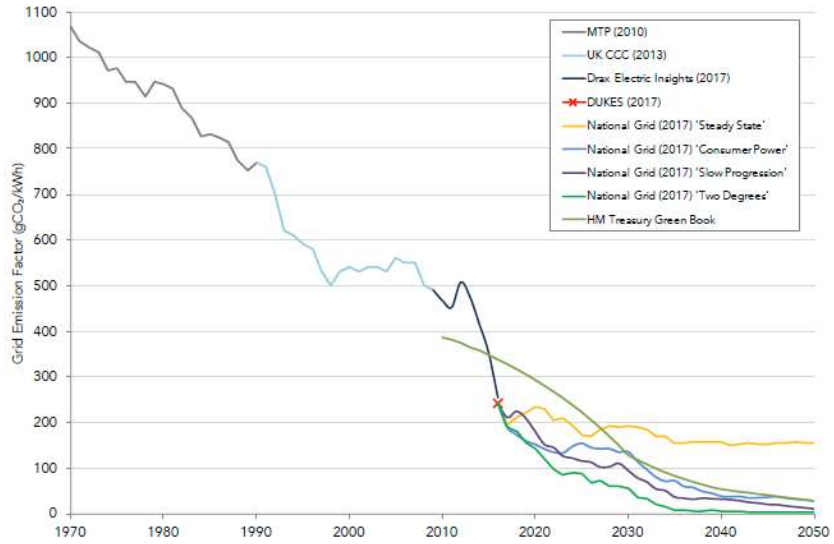

Figure 3.01 – Historic and projected carbon content of electricity

Source: Etude, *Low Carbon Heat: Heat Pumps In London* (September 2018)

The much-reduced carbon intensity of electricity generation will be reflected in the next edition of SAP.

		SAP (2012)		SAP 10		SAP 10.1 consulation	
Heat Source	Efficiency of Heat Source	Carbon Intensity ($kg\ CO_2$ per kWh)	Carbon Emissions ($kg\ CO_2$ per kWh)	Carbon Intensity ($kg\ CO_2$ per kWh)	Carbon Emissions ($kg\ CO_2$ per kWh)	Carbon Intensity ($kg\ CO_2$ per kWh)	Carbon Emissions ($kg\ CO_2$ per kWh)
Gas Boiler	85%	0.216	0.227	0.208	0.219	0.208	0.219
GSHP	300%	0.519	0.173	0.233	0.078	0.136	0.045
Direct Electric	100%	0.519	0.519	0.233	0.233	0.136	0.150
GSHP Carbon Savings against Gas Combi Boiler			24%		65%		80%

DISTRICT HEATING
VS
SHARED GROUND LOOP ARRAYS

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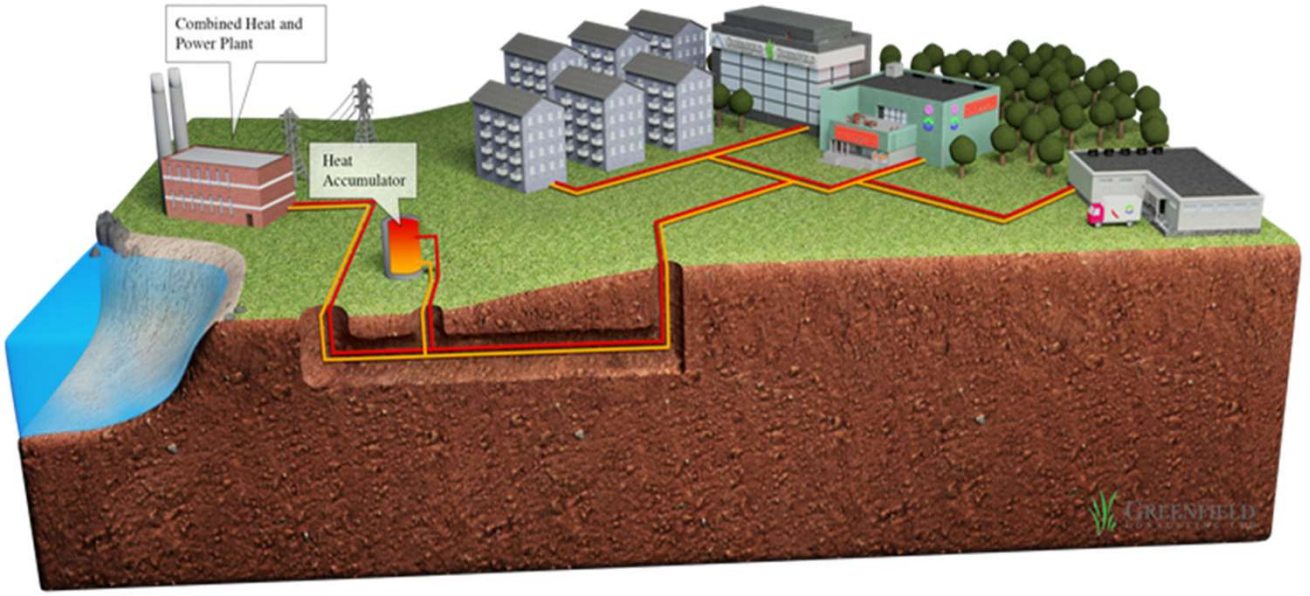
DISADVANTAGES OF TRADITIONAL CENTRALISED DISTRICT HEATING

Main disadvantages:

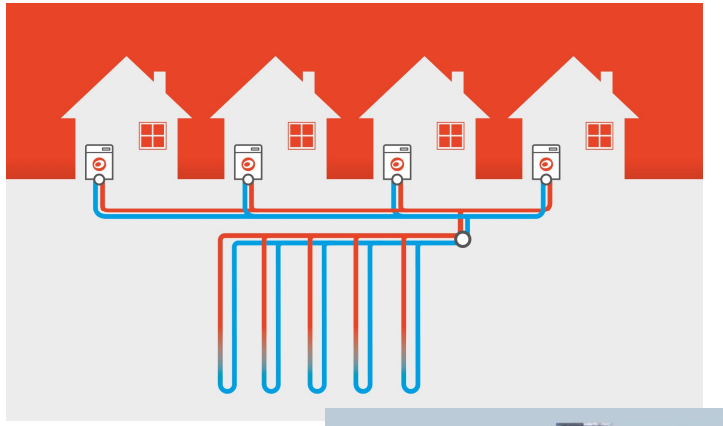
- Central heat plant which requires fossil fuel back up. If offline all end users are without heating or hot water.
- High temp heat network 50-90°C. Heat loss through pipework which reduces efficiency resulting in less CO2 savings and higher operating cost
- Each end user has a Heat Interface Units (HIU) which requires regular servicing and maintenance
- Requires Heat Metering and Heat Billing which is onerous and results in high operating costs and consumer protection issues.



A NEW APPROACH SHARED GROUND LOOP ARRAYS

DISTRICT HEATING vs SGLAs

Shared ground loop arrays are a form of ultra-low temperature heat network connecting Kensa ground source heat pumps inside individual dwellings.



- Simple, flexible and infinitely scalable solution for large developments
- Ambient temperature network: -5-20°C – no heat losses
- Mimics a traditional gas framework. Boreholes last 75-100 years +
- Individual heat pump in each dwelling – no billing or metering
- No external plant – no visual impact
- No energy centre, central plant or pumps, no pre-insulated pipework or HIUs – low operational requirements
- No sale of heat, no heat metering and no heat billing required. Hassle free low cost operation
- Applicable to all housing and building types.

https://www.kensacontracting.com/services/fifth-generation-district-heating-cooling/shared-ground-loop-arrays/

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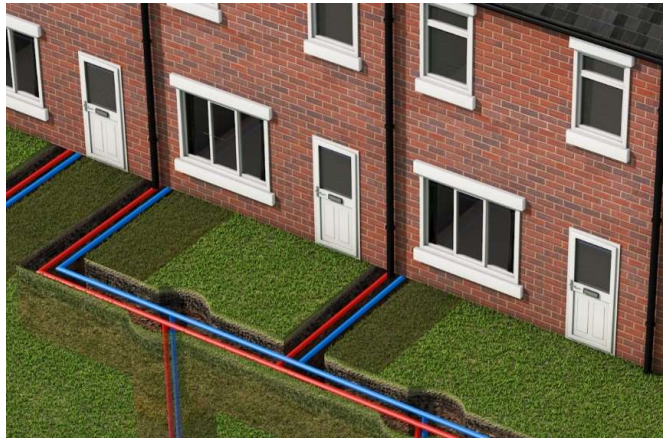
SGLA BENEFITS

The benefits include:

- the lowest carbon emissions of any heating technology (thereby making significant progress towards net zero communities)
- considerable improvements to SAP/EPC ratings achieving gold sustainability standard in Scotland without additional technologies
- the lowest end users fuel costs of any heating technology, alleviating fuel poverty in Scottish communities (up to 45% savings when replacing electric storage heaters)
- low maintenance and servicing requirements making systems hassle free to operate
- an income available via the Non-Domestic RHI for 20 years making the business case very viable indeed.
- no requirement for energy centres or districting heating pipework
- no requirement for heat metering or billing to residents
- suitable for any housing type - tower blocks, apartment blocks, terraced, semi-detached detached etc.
- ability to interface with local grid management and time of use tariffs
- ability to provide both cooling & heating to buildings



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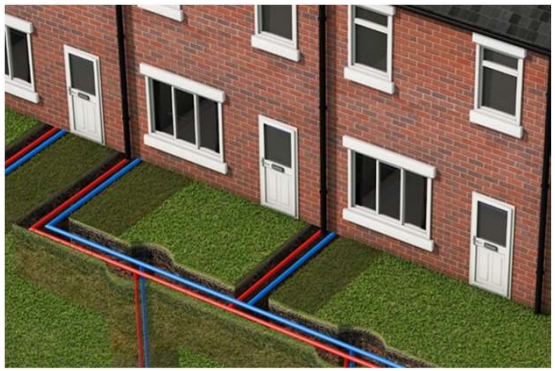
FIFTH GENERATION HEAT NETWORKS FEATURING SGLAS

- Due to higher efficiencies, ground/water source heat pumps achieve the highest CO2 savings and end user fuel cost savings comparative to other heat pump types or fuel sources.
- Heat sources are typically closed loop boreholes but could be open loop using aquifers or mine water, water source (closed or open loop in fresh water river, lochs, reservoirs, canals or potentially sea water), Energy from Waste…
- Can easily provide low cost cooling. This energy boosts the heat network further improving heating efficiencies
- Can be integrated with a “smart” programmable thermostat and dynamic pricing tariffs to mitigate heat use during peak times. This has the added benefit of a) reducing end user running costs by an additional 25-30% b) stabilise local and regional grid issues during peak demand – currently trialled at Energy Superhub Oxford (see link below)



Useful links

- https://www.kensacontracting.com/services/fifth-generation-district-heating-cooling/
- https://www.kensacontracting.com/services/fifth-generation-district-heating-cooling/shared-ground-loop-arrays/
- https://www.kensacontracting.com/energy-superhub-oxford-eso/
- https://www.kensacontracting.com/community-heating-district-heating-with-ground-source-heat-pumps/

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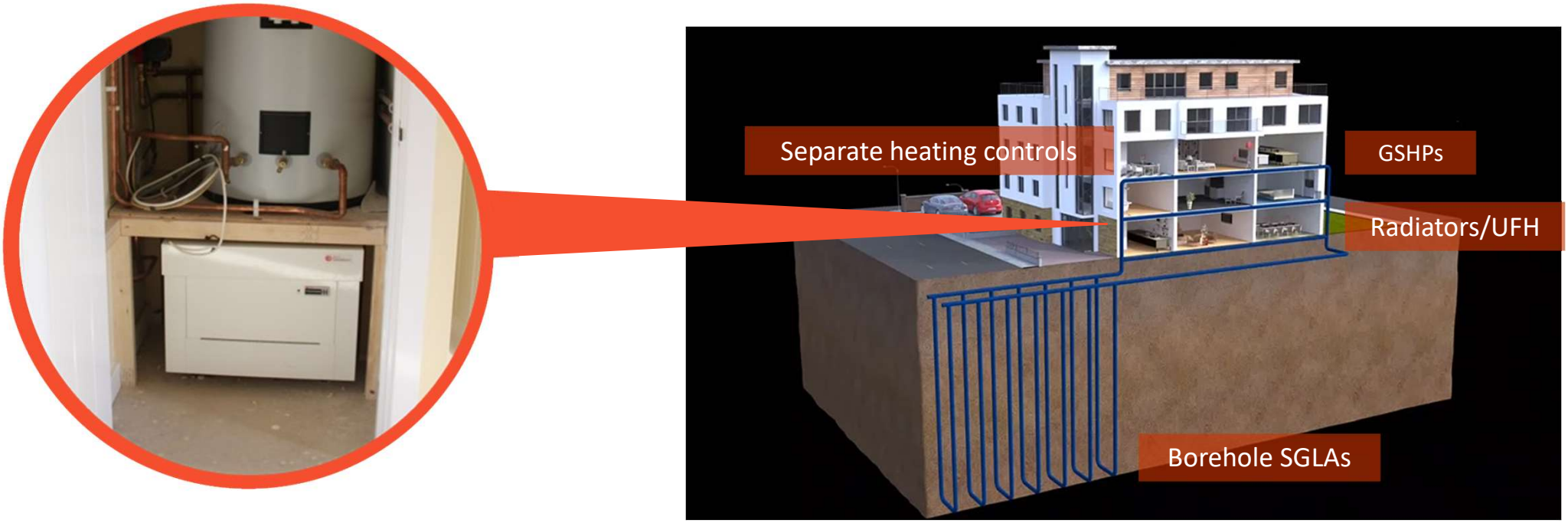
HOW IT WORKS

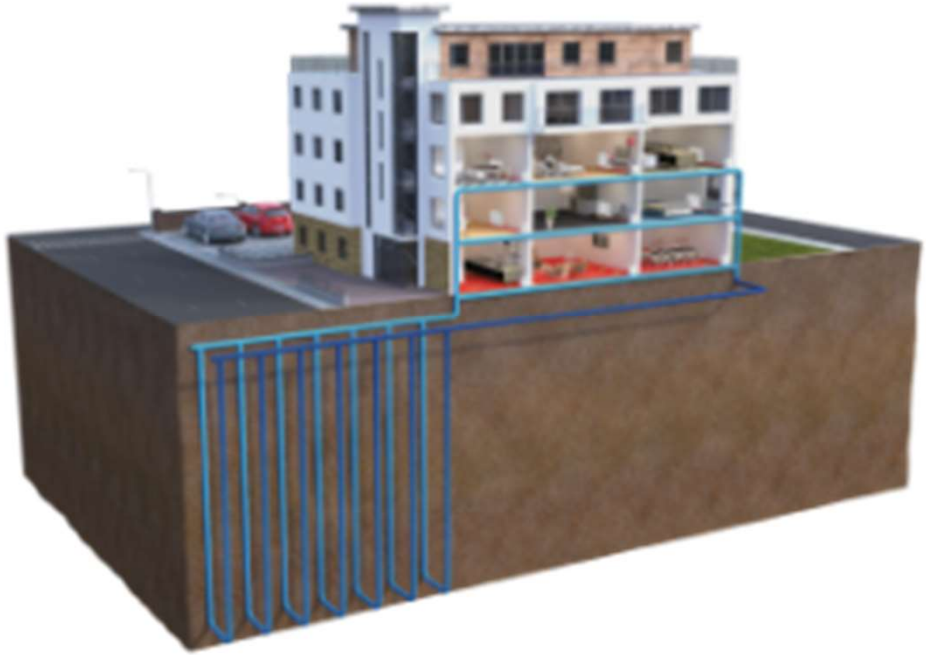
DISTRICT HEATING vs SGLAs

An individual Kensa heat pump inside each dwelling provides independently controllable heat and hot water for each property.



SUMMARY

- Individual Kensa shoebox GSHP in each flat connected to household electricity supply with radiators, hot water tank and simple controls
- Shared communal ground array with an ambient temperature loop rising through the tower block
- Ofgem confirmed that as few as two linked properties constitutes as a district system
- Technically robust solution
- ECO and non-domestic RHI eligible
- Extremely low householder running costs (30-50% savings versus existing electric heating)
- No plantroom
- No expensive, insulated distribution pipework
- No heat billing



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KENSA'S SHOEBOX HEAT PUMP

A perfect fit for Shared Ground Loop Arrays:

- 3kW and 6kW models
- Quiet operation: 47 dBA and 52 dBA
- Compact design: 530mm x 475mm x 370mm
- or 560mm x 605mm x 565mm (H x W x D)

- Integrated ground side circulation pump
- Heating and hot water (above 60°C)
- Fits in a cupboard or under a sink.
- Suitable for small properties
- Compatible with all control systems

https://www.kensaheatpumps.com/ground-source-heat-pump-products-services/shoebox-ground-source-heat-pump/

DISTRIBUTION SYSTEM & CONTROLS

- Distribution system sized to 45°C flow temperature
- Radiators oversized
- Timeclock
- Central thermostat
- TRV on radiators
- Hot water priority
- 60°C stored hot water
- Local hot water cylinder

TENANT TESTIMONIALS

“We were spending £70 per week before on electric, we have now knocked that down by just over half, so it's a big difference and the house is really warm now.

“The system is very easy to use, simple, it's not hard at all, anyone could do it.”

“Night storage heating was extremely dear, especially given that you didn’t get any heat after tea time.

“I’ve been writing down how much money I’ve been putting in since the heat pump installation, I reckon I’m saving between 35-40% to what I was putting in before.”

GSHPs & HOUSEHOLDERS

"I've lived with many heating systems, coal, oil, gas, storage heaters, but ground source has to be my favourite, it provides a nice, gentle, constant heat that keep my home really comfortable."

BOREHOLE INSTALLATION

For developments with multiple properties, vertical boreholes are typically used to extract heat energy and are linked together to form the shared ground array.

- Closed loop pipework in vertical hole
- Dependant on site geology
- Requires specialist installation
- Typically 100-200m deep
- Gives 30-60 Watts per metre
- Space efficient and quick
- More expensive than slinkies or water
- Economies of scale can be realised
- >100 year borehole life expectancy

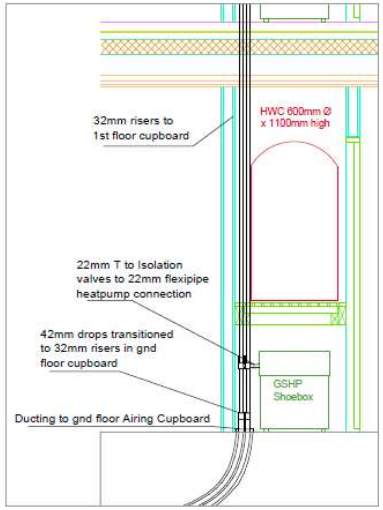
https://www.kensaheatpumps.com/district-ground-source-heat-pumps-installation-in-tower-blocks

BOREHOLE INSTALLATION

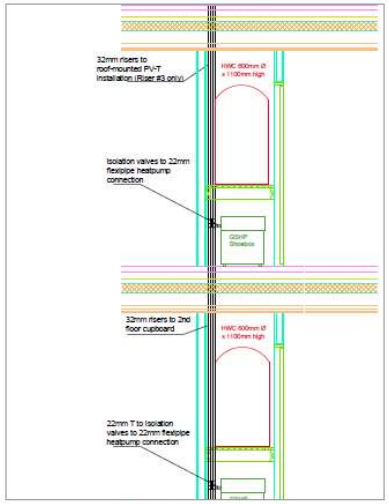
DISTRICT HEATING & SGLAs

DISTRIBUTION PIPEWORK

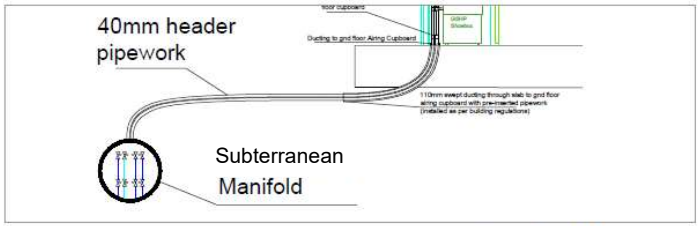
- Subterranean manifold
- Fusion weld connections
- Isolation to each borehole and each property/riser
- Driveway rated lid (35kN)
- Filling and commissioning point for ground array
- Up to 16 connections



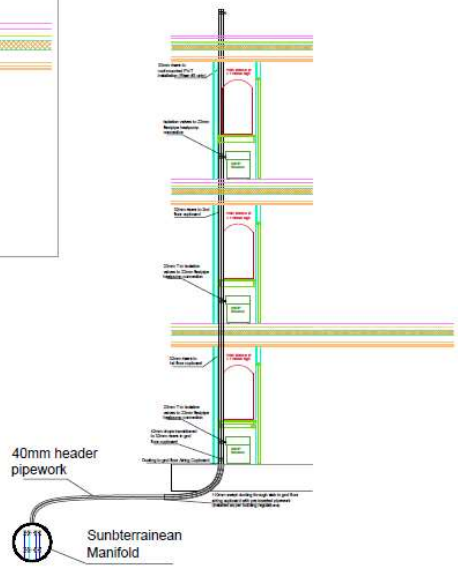
Gnd floor



1st & 2nd floor



Header to Gnd floor



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PASSIVE & ACTIVE COOLING

Passive cooling

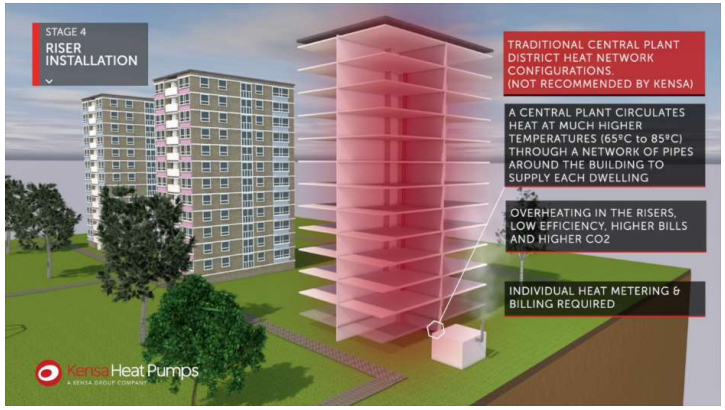
- SGLAs utilise cooler ‘source’ temperature of ground
- Delivers ‘free’ or passive cooling in summer by bypassing the GSHP
- Used with a fan coil, passive beams or an underfloor cooling system

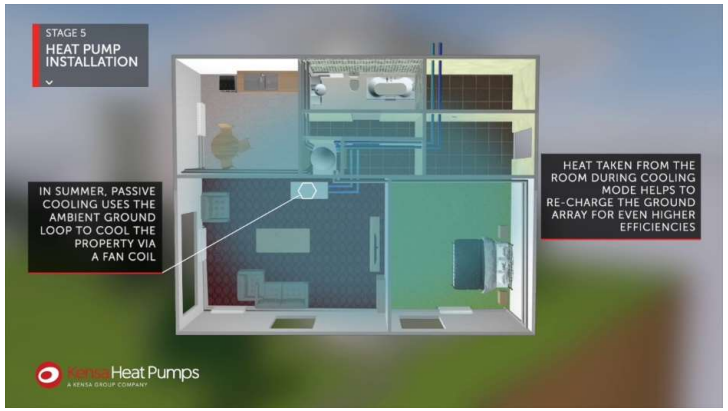
https://www.kensaheatpumps.com/ground-source-heat-pumps-passive-cooling

Active cooling

- Kensa heat pumps can operate in reverse-cycle mode
- Providing ‘active’ cooling by generating chilled water
- Modifications made at time of manufacture

DISTRICT HEATING vs SGLAs





Kensa Contracting offers flexible service delivery options depending on the level of project management required.

This can include:

- feasibility studies, geological surveys & financial modelling
- ground array sizing, design & installation
- heat pump selection, installation & commissioning handover
- integration with existing or upgraded heat emitters
- integration with existing or upgraded heating controls
- sub-contractor management
- tenant liaison and householder education
- support with RHI & ECO grant funding applications
- warranty & after sales support

https://www.kensaheatpumps.com/the-technology/installation-fullfilment/kensa-contracting-ltd/

CASE STUDIES

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The UK's leading ground source heat pump manufacturer and installation contractor

SUITABLE FOR ANY HOUSE TYPE

- District system requires just two properties to be connected to one array
- Low rise blocks of flats
- Houses and bungalows
- New build developments also qualify for NDRHI
- GSHP can be installed just about anywhere!

Low rise flats – Hanover Housing

New build houses - Shropshire Rural HA

Retrofit houses – Flagship Housing

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DRILLING THROUGH GRANITE IN NORTH EAST SCOTLAND

- Converted Old School in North East Scotland
- Bedrock found at 48 metres depth
- 10 boreholes each 100-140m
- 24 new build apartments
- Drilling complete in Sept 2020
- Whole works completed by March 2021

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RETROFIT, MIXED DEVELOPMENT

COSTED EXAMPLE

Shared Ground Loop Array System Based on average property for completed scheme	
Lifetime CO_2 savings	83 tonnes
Typical annual running cost saving vs NSH	£352
Total capital cost (exc. VAT)	£17,165
Heat pump, cylinder and ancillaries	£5,500
Boreholes, trenching and headering	£6.875
New radiator system supply & install & system commissioning	£4,500
Design and project management	£290
Existing system replacement costs (fuel switch)	£5,000
ECO funding contribution	£1,356
Total additional cost	£10,800
Total RHI contribution	£14,077
Payback period	15 years

In brief:

22 flats and 1 site office

Previously heated by electric NSH

Orkney Islands Council, Warehouse Buildings

- Closed loop sea source project
- 12 x pond mats submerged beneath the pier in Stromness harbour
- 2 x 40kW Plant Room sea-source heat pump
- The cost of the electricity used to run the 2 x 40 kilowatt (kW) heat pump was £1,550 over the 12-month period, compared to £2,420 for an oil-based system.
- CO2 savings of six tonnes per annum, compared to more than 15 tonnes if an oil boiler had been fitted

Sunderland, Gentoo

- 364 properties
- Already has cavity wall insulation and window replacement
- Replacing 20 year old gas boilers with GSHP
- Installing sprinklers and upgrade electrics to each block
- Ambient loop from aquifer 60m
- 4 individual open loop points
- Smart controls: Switchee thermostat
- SunAmp: hot water batteries, saves space, no annual service requirement, no G3 high pressure relief requirements, maintained mains water pressure.
- Saving 420 tonnes of CO2/pa
- Gas removal programme

ENFIELD COUNCIL – RETROFIT, FLATS

COSTED EXAMPLE

- Retrofit project
- 402 flats
- 8 tower blocks, 13 storey
- 96 boreholes
- 212m typical borehole depth
- £4.6 million project
- £4.3 million RHI return
- 773 tCO_2 saving/yr.
- Running costs for residents reduced from £900/yr. to £350/yr.
- 2000 Cars off the road

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Together Housing, Lancashire and South & West Yorkshire

- Up to 1000 Ground Source Heat Pumps over 2 years
- Shared ground loop array systems retrofitted to houses and flats
- Borehole drilling of up to 200m
- Up to 45% savings on running costs
- Project eligible for the Non Domestic RHI
- 20 year life-cycle for Ground Source Heat Pumps

https://www.kensacontracting.com/togetherhousing/

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Trent & Dove, Chestnut Mews & Aspen Mews

- 60 properties in two blocks of three-storey flats
- 40 communal boreholes, average depth of 140m
- Kensa Shoebox 6kW Twin per flat
- Replacing old inefficient night store heaters - £500 Saving
- Eligible for Non-Domestic Renewable Heat Incentive (RHI)
- Winner: Best Client (National Housing & Maintenance Forum 2016)
- Winner: District Heating Project of the Year (H&V News Awards 2017)

https://www.kensacontracting.com/ground-source-review-chestnut-mews-aspen-mews/

SGLA PROJECT OVERVIEW

ENGIE & Enfield Council

The UK's leading ground source heat pump manufacturer and installation contractor

ENFIELD PROJECT – STEP BY STEP

PROJECT OVERVIEW

In brief:

- Client: Enfield Council
- Principal Contractor: **ENGIE**
- Specialist subcontractor: **Kensa**
- England's largest shared loop district GHSP system
- Eight tower blocks – up to 402 individual flats
- Expected 30-50% savings on residents' heating bills
- Significant CO_2 emissions reductions
- Generates 20 year RHI income for Enfield
- Enfield Council benefits from ECO funding
- Commenced: **November 2017**
- Completed: **October 2018**
- Total contract value: **£7.3m**

GREATER LONDON
ENERGY EFFICIENCY
REGIONAL AWARDS 2018
LARGE
SCALE PROJECT
WINNER

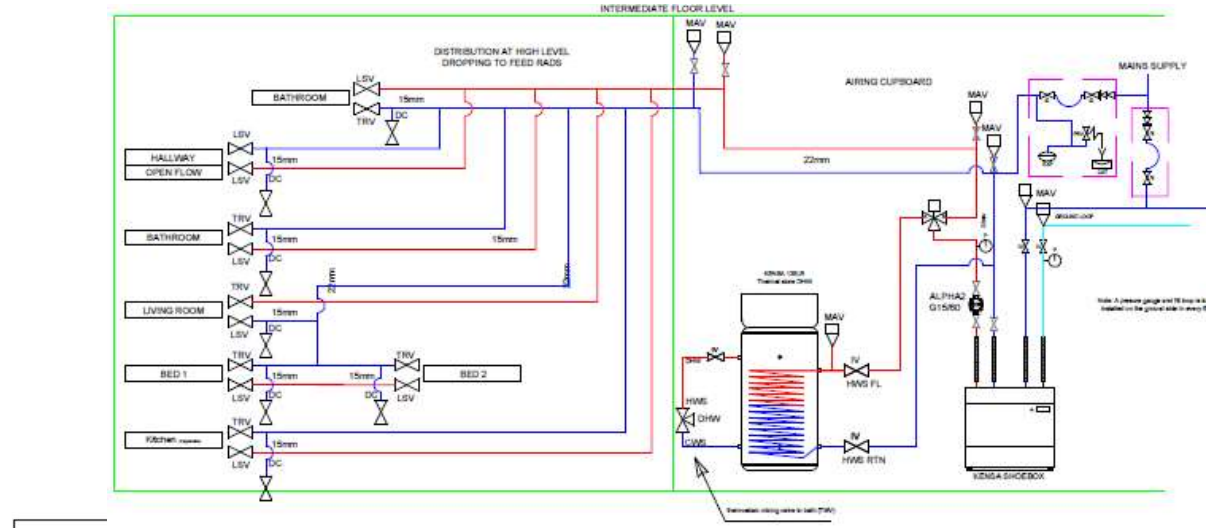
Kensa Contracting
A KENSA GROUP COMPANY

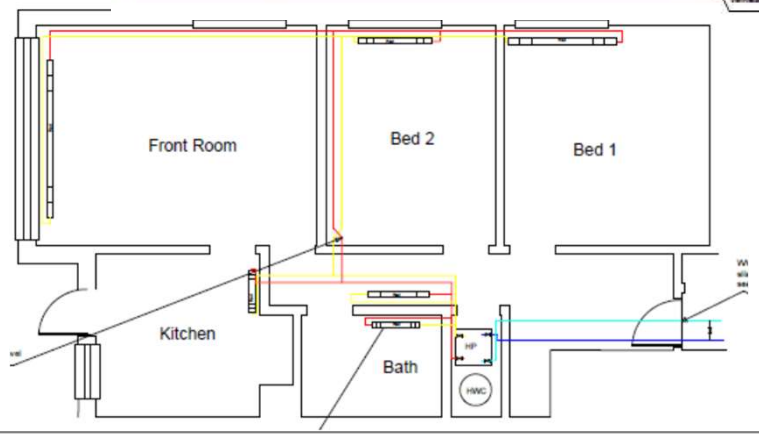
1. Tenant liaison

- Resident remained in occupation throughout the works
- Resident Liaison Officers consulted each family before, during and after works
- Communal meetings held for each block prior to works
- Individual plans agreed to ensure safe delivery of works
- Access to respite area for residents
- Ability to view mock-up for typical flat installation
- Opportunity to ask technical/general questions

2. Survey and Design

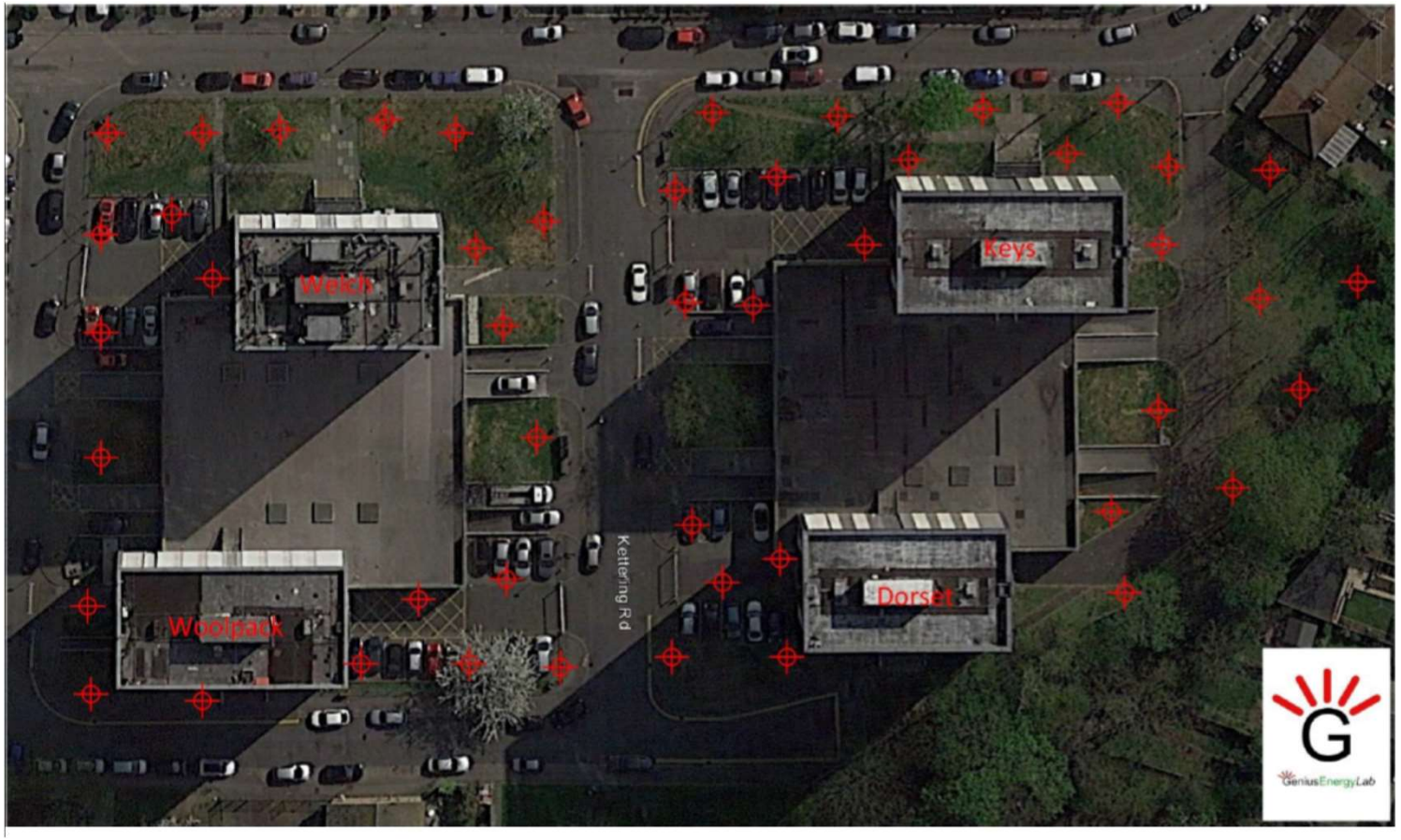
- Detailed property surveys to establish heat loads for accurate heat pump sizing and radiator sizing
- Borehole design was a combination of desktop analysis and on-site Thermal Response Test
- Risers designed to ensure no requirement for central circulation pumps
- Surveys carried out to locate all buried services – both externally and internally





3. Borehole drilling

- Specialist pre-drilling at each borehole location to rule out presence of UXO
- Channel Islands: 52 boreholes, 10,700 metres, 16 arrays
- Each array serves half a tower block – 6 or 7 floors and 24-27 flats
- Channel Islands drilling completed in four months
- Kettering Road: 48 boreholes, 10,000 metres, 16 arrays
- Kettering Road drilling will complete next week


Welch
Keys
Woolpack
Dorset
Kettering Rd
GeniusEnergyLab

4. Trenching and headering

- Trenches are dug from each borehole
- Pipework (HDPE) is installed at the bottom of the trench connecting the boreholes to the manifolds
- Manifolds group the boreholes together into two arrays
- Two pairs of pipes run from manifolds into the basement of each tower block
- All ground reinstated at the end to match what was there previously

5. Riser installation

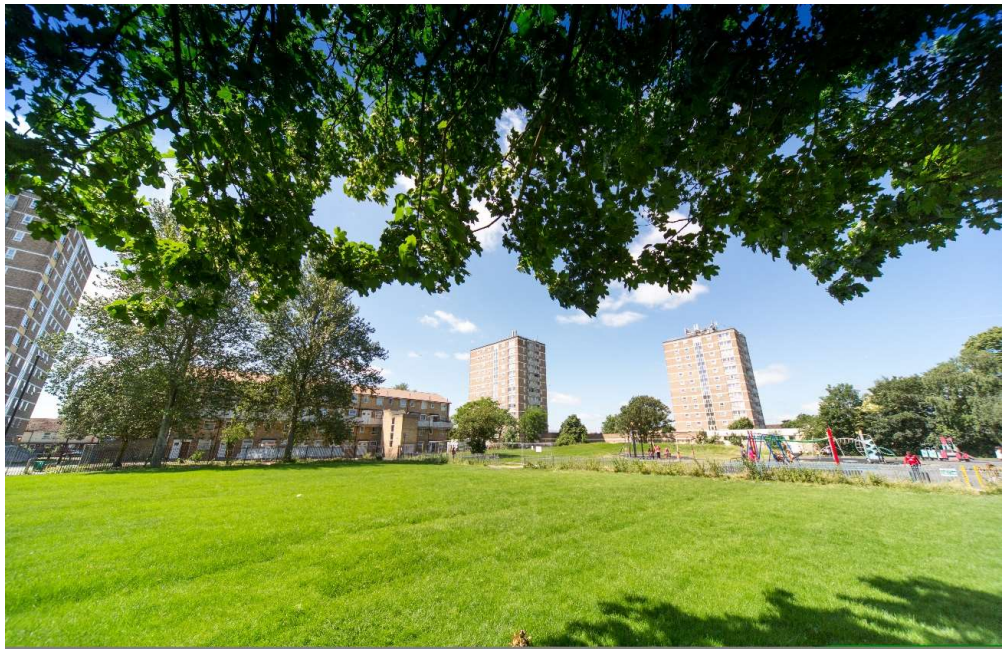
- Risers installed in stairwells from basement to top floor
- Core drilling on each floor
- Four pipes from basement to 6th floor
- Two pipes from 7th to 13th floor
- Branches taken off at each floor to serve the four flats
- Pipework insulated to prevent condensation
- Will all be boxed in once completed
- All work approved by Enfield Council's fire safety team

6. Flat installation

- Existing hot water cylinder and storage heaters removed (where fitted)
- New radiators and distribution pipework installed
- Heat pump installed in airing cupboard
- Shelf fitted and hot water tank installed above heat pump
- New controls – dial thermostat and twin channel programmer
- Ground array flushed and filled with anti-freeze
- Heat pump system switched on
- Existing electric UFH system de-commissioned
- Making good and pipework painted
- System handed over to resident

7. Key outcomes

- £4.3 million RHI return
- ECO funding obtained for client
- 773 tCO_2 saving/yr
- Running costs for residents reduced from £900/yr to £350/yr
- Significant reduction in maintenance costs for Enfield Council



Funding in Scotland 

- Low Carbon Infrastructure Transition Programme: financial support to assist the development and delivery of private, public and community low-carbon projects in Scotland. Currently £20M for social housing retrofit – 50% grant + 30% loan.
- District Heating Loan Fund: open to local authorities, registered social landlords, SMEs and energy services companies [ESCOs] with less than 250 employees. Loans available up to £1M+ at 3.5% over 15 years.
- Warm Home Fund: £150m designed to support local authorities, registered social landlords and other organisations working in partnership with them, to address some of the issues affecting fuel poor households
- Energy Investment Fund (EIF): £20M towards accelerating the development of commercial low carbon energy projects in Scotland. Delivered by Scottish Investment Bank.
- **Ofgem Energy Redress Fund:** Grant funding to support innovation in protecting vulnerable energy consumers
- Private investors in Shared Ground Arrays. Long term approach to decarbonising heat in Scotland.
- CARES: For community energy focussed projects

CONTACT DETAILS

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Shoebox Ground Source Heat Pump

The Kensa Shoebox Ground Source Heat Pump Series features the quietest, smallest and most innovative ground source heat pump on the market.

Available in 3kW single compressor models and 6kW twin compressor models, the award-winning Kensa Shoebox Series is an efficient, practical and affordable heating solution engineered to provide both heating and hot water in new build and retrofit multi-dwellings and starter homes.

Explore example Shoebox ground source heat pump costs in our new Solution Centre.

Community Heating - District Heating With Ground Source Heat Pumps

Accreditations

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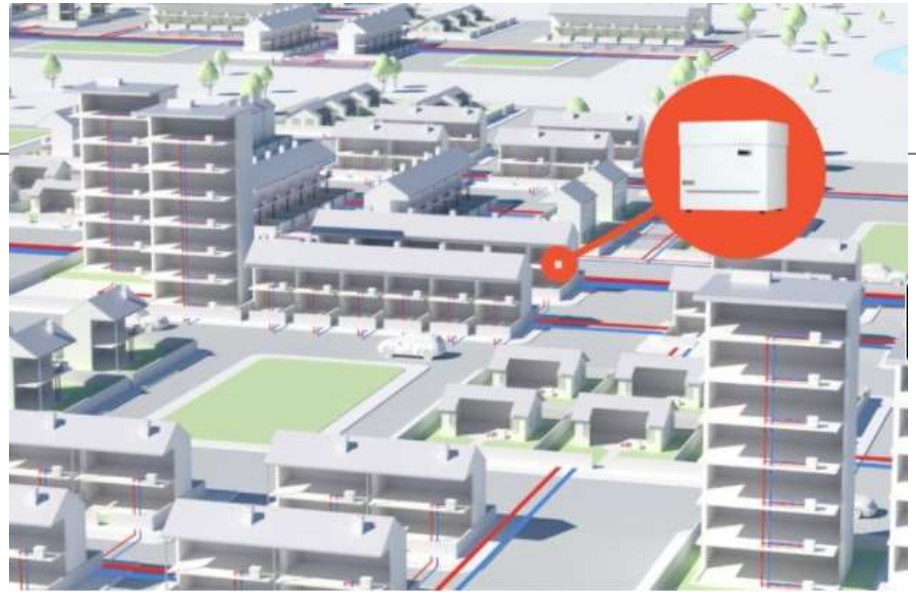

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CHALLENGES FOR DEPLOYMENT

- Low price of Mains Gas
- Out of date Standard Assessment Procedure (SAP): We still use SAP2012 to assess carbon in buildings. SAP2012 CO2 intensity of electricity is 519g/kWh. Reality in Scotland is about 10% of that figure meaning that in the real world Ground Source Heat Pumps in on-gas areas will reduce CO2 by 80%+. SAP needs to be updated more frequently to reflect the changing landscape.
- Uncertainly in the market place due to the closure of Non-Domestic RHI: A Scottish RHI?
- Tight grant funding deadlines
- More certainty required around banning of fossil fuel appliances in new and existing buildings moving forward.

Useful links

- https://www.kensacontracting.com/the-uks-largest-gas-replacement-programme-with-ground-source-heat-pumps/ - open loop gas replacement in seven tower blocks in Sunderland
- https://www.kensacontracting.com/meeting-grid-demand-with-heat-pump-innovations/
- https://www.kensacontracting.com/croydon-council-responds-to-climate-emergency-with-kensa-contracting-gshp-pilot-scheme/

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