

Enfield Heat Pumps

Tackling fuel poverty through renewable heat

Ieman Barmaki

Commercial Sustainability Manager

In collaboration with Kensa & Engie



Striving for excellence



DE- CARBONISING HEAT

- THE BIGGER SUSTAINABILITY PICTURE-
SUSTAINABLE ENFIELD
- FUEL POVERTY- ENFIELD *WARMER HOMES*
- NATIONAL AND LOCAL POLICY
- WHAT IS A GROUND SOURCE HEAT PUMPS
- BUSINESS CASE
- DELIVERY
- LESSONS LEARNT



About Enfield

- Population of 340K and most northerly borough
- 15K businesses
- Enfield was recorded in Domesday Book 1086 as a small settlement called Enefelde.
- King Edward 1- Charter 1303 Enfield Town Market first opened
- Enfield has the longest length of river corridor in London, Lea 68 KM.
- Enfield Town is home to the first ever cashpoint in the world at Barclays Bank



Our timeline

sustainable enfield

Building a better tomorrow, today

New 60% carbon reduction targets



Tackling fuel poverty

- 11% of Enfield residents are in fuel poverty
- Funding certainty has always been an issue due to lack of strategy
- 264 Green doctor visits saving a total of £323k
- 60 boilers installed to private sector vulnerable households (NEA)
- Carbon Offset funding available
- Installing free energy efficiency measures
- Offering hints and tips on energy switching



Significant savings for Mrs Z in Enfield through Local Energy Advice Programme:

Mrs Z's daughter said: *"Thank you SO much for everything you did at my mum's house last week. The heating surveyor came round today and took lots of measurements and photos. It's all happening very quickly. On your advice, I've also convinced mum to change energy supplier, saving her nearly £150 a year. My mum will be so much more comfortable at home now."*

The “Green” Business Case

1. **Strategic Case**
 - Decarbonising heat, national and local policy
2. **Economic Case**
 - Value for money, cost benefit & options appraisal
 - DO NOT LOOSE SIGHT OF THE SOCIAL IMPACTS
3. **Commercial Case**
 - Strategy, HRA 20 year business plan & cost recovery
4. **Financial Case**
 - Financial modeling, pay back periods, RHI, ECO
5. **Management Case**
 - 20 years of monitoring, Project management, choosing contractor & contract delivery

THE GREEN BOOK

CENTRAL GOVERNMENT GUIDANCE ON APPRAISAL AND EVALUATION

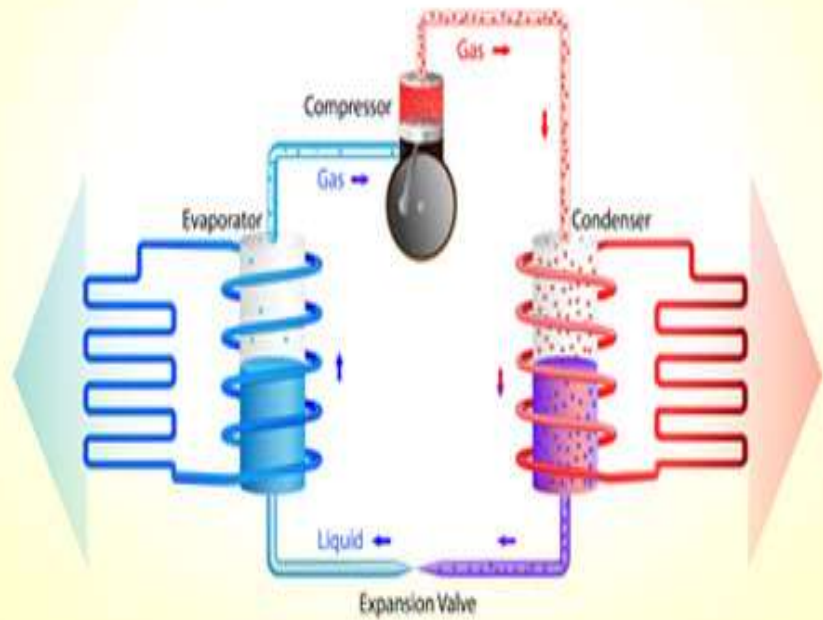
BASIC OPTIONS APPRAISAL (LIFE CYCLE COSTING)

Heating Source (100 properties)	Cap EX	Maintenance, Consumption income	Life Cycle Cost
GSHP	£1,500,000	£1,200,000 - £1,000,000(RHI)	£1,700,000
Gas boiler (Condensing)	£750,000	£1,750,000	£2,500,000
Electric (Modern storage heater)	£400,000	£2,500,000	£2,900,000

**HEAT PUMPS-
NOT JUST A
GREAT
PHOTO
OPPORTUNITY**



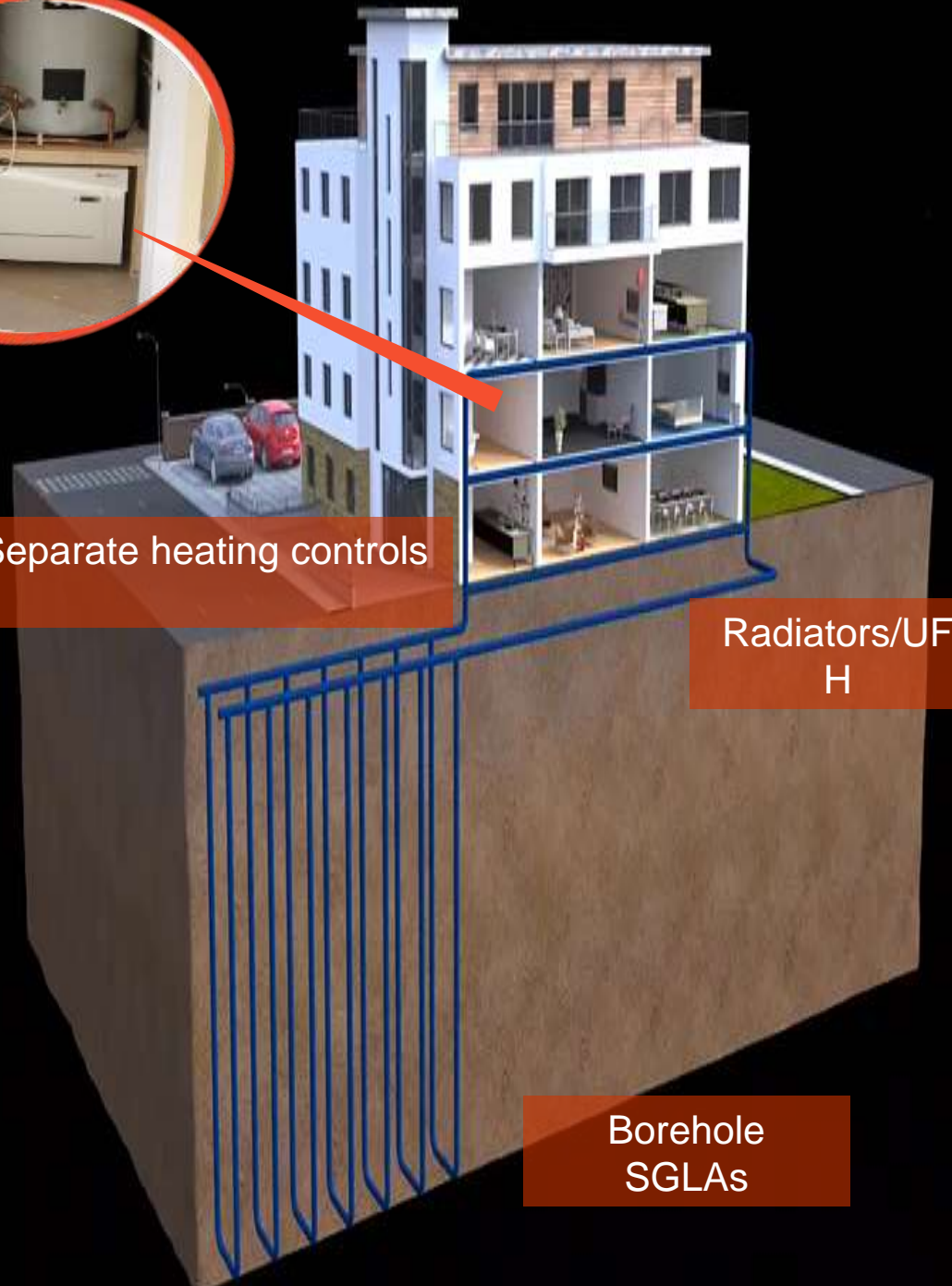
HEAT PUMP



Separate heating controls

Radiators/UF
H

Borehole
SGLAs



Renewable Enfield: Ground Source Heat Pumps

- 2 ground source heat pump projects in 2 years
- Largest installation in local authority setting in England
- Initial 4 tower blocks and 187 properties
- Second project scaled up to 8 tower blocks and 400 properties
- £15 million CapEx across both projects
- ECO income and RHI subsidies- £7m
- 8,000 tonnes of lifetime carbon saved per block
- Total 96,000 tonnes lifetime carbon saved
- 50% heating cost saving for residents, helping alleviate fuel poverty in some of London's most deprived wards
- Increased thermal comfort: external wall insulation and ventilation installed at the same time
- Appetite for further installation projects subject to HRA funding



STAGE 2
BOREHOLE
DRILLING

THE NUMBER OF BOREHOLES
WILL VARY FOR EACH PROJECT





Borehole depth
=
4 Tower blocks





Resident Engagement

- Resident remained in occupation throughout the works
- ENGIE and Enfield Resident Liaison Officers consulted each family before, during and after works
- Communal meetings held for each block prior to works
- Access to respite area for residents
- Ability to view mock-up for typical flat installation
- Opportunity to ask technical/general questions
- Dedicated website for residents to view progress information, photos, upcoming community events



Challenges

Strategic drivers CHP vs GSHP

Contractor with experience

- keep it simple and procure well

Operation and Maintenance

- issues with day to day repairs team

Lack of Software in the market for monitoring

- Developing a bespoke software or altering existing

Complicated heat pumps initially

- Simple design and UK manufacturing is a must

Lessons Learned

(APSE Briefing 18/18 4th December 2018)

- **Technical design:** consider opportunities to reduce energy consumption on landlord supplies, as well as operations and maintenance to reduce maintenance costs by thinking of alternative designs
- **Specialist renewable expertise:** required to input into the technical scope, as opposed to a standard mechanical and electrical framework contractor
- **Funding and policy:** be aware of different funding options and keep abreast of regulatory changes e.g. heat meter requirements
- **Heating technologies:** consider lifecycle costs of different technologies over the same period
- **Business model:** carry out an early options appraisal on various billing options, balancing the Council's appetite for risk against income opportunities and social benefits
- **Evaluate different funding options and write them into the contract:** ensures the contractor delivers them, avoiding the use of in-house resources
- **Project meetings:** they require proactive input and challenge from someone with renewable expertise
- **Air cooling:** install air conditioning at the same time as ground source heat pumps. As summers become hotter, excess deaths from heat waves will become more common, especially in big cities from the heat island effect. It is cheaper to install cooling as part of ground source heat pump installations, than to have to retrofit later. They will also replenish the ground source heat supplies

Benefits

V

Risks

- Independent & Lowest bills
- Lowest emissions
- Payback through RHI
- Potential for summer cooling
- Planning exempt
- No plant room required
- Makes use of natural capital
- Longer life cycle 20 years+
- Fuel poverty mitigation
- Load Shifting

- Lack of knowledge in Day to Day supply chain (upskilling)
- Technical design subject to change on site
- RHI application onerous
- Annual statements required to claim RHI
- No monitoring unless you specify in design
- Resident behaviour change

The Social Economic & Environmental impacts



- £7.2m is made available to residents
- Average fuel poverty gap in UK is £350 pa < £600 savings per resident from GSHP
- Carbon saving = 4800 cars of the road every year

Council Leader, Cllr Nesil Caliskan says:

“This is an eco-friendly system that has enable residents to save between £450-700 a year in heating costs at a time when household budgets are being squeezed. This project is good for residents and good for Enfield.”

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Ieman Barmaki

ieman.barmaki@enfield.gov.uk

02083795460