Harvist Estate

Major Works Programme

Capital Works Team

October 2022

This document is a summary of presentation given at residents meeting in October 2022.

The purpose of the meeting was to consult with all residents of the estate, to listen and take feedback on the proposed mechanical works. No decisions have yet been made on final works will be carried out.

At this stage some early surveys have been undertaken, along with a detailed technical report on the proposal. The proposal is to be peer reviewed by an external consultant.

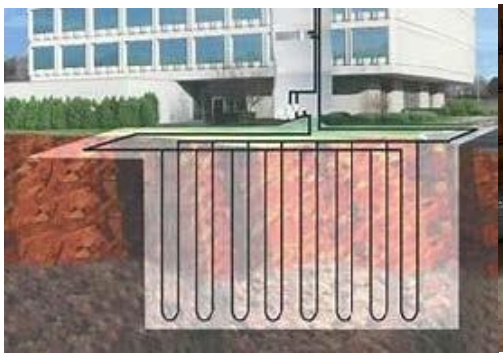
A detailed schedule of works will be developed over the coming months, allowing all suggestions made to be taken on board.

We cannot guarantee that suggested works will be included, but they will be reviewed by technical and financial council staff.

Area of discussion:

- Review options to upgrade the existing heating and hot water
- Advantages/disadvantages of each option
- Other systems which could be considered
- Mechanical Ventilation for high rise blocks
- Solar Photovoltaic
- The role of CHP (Combined Heat and Power)

Option 1: Geo-thermal system with ground source heat pumps (GSHPs)



Advantages:

- The most sustainable option-good energy provider by using the ground to heat and provide hot water and, in some cases, to cool your home. unlimited natural resource
- Will lower your electricity bills as the only electricty used are for the pumps circulating from the ground to the heat pumps in the plantroom to your home

Disadvantages:

- Electiricty prices have increased considerably
- An all electric heating system, even under night tariff or Economy 7, will still be expensive currently as it will need to provide all the energy for heating, cooking and lighting
- Costly if you do not drill down deep enough to access an aquifer (an underground layer of water between rocks) that transfers heat from one side of the aquifer to the next to provide heating and hot water. We will need several boreholes for this estate.
- Some systems require a plantroom to be built to house the ground source heat pumps, the hot water vessels, heat exchangers and circulating pumps.

Option 2: Air to water heat pumps - centralised option for the low-rise flats (cascade system)


Commercial heat pumps

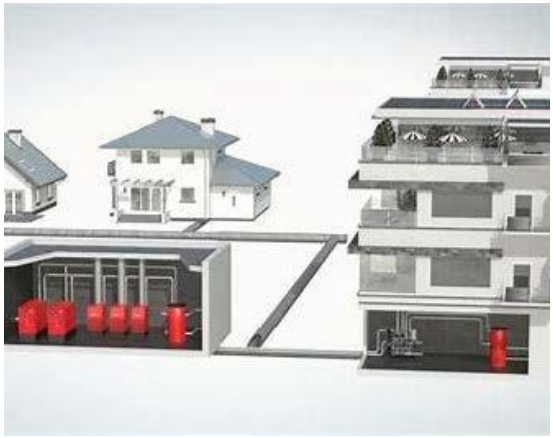
Advantages:

- Air to water heat pumps have a longer life cycle than traditional boilers
- They are energy efficient and produce no carbon emissions
- Your bills will be lower
- They provide heating and hot water and can work in low temperatures to extract heat from the air to your home
- Availability of grant funding to hep fund this –i.e. social housing decarbonisation fund (SHDF) or green heat network fund (GHNF)
- A hybrid system can provide more flexibility in terms of temperature range

Disadvantages:

- It is costly to retrofit in existing homes
- New larger radiators may be needed as the temperatures of an air source heat pump is lower than your traditional gas boiler system
- Additional space may be required for a larger hot water cylinder
- Noise and space should be taken into consideration on where you locate the heat pump.

Option 3 - Communal/District heating system



Advantages:

- Similar to the geo-thermal system, but will not require deep borehole drilling, but will require trenches to each block of flats
- There will be just one plantroom where all the boilers, hot water tanks and other plants will be located
- Although all combustion of carbon compounds releases CO2, a larger proportion of the inherent energy in the fuel is converted into electricity or useful heat in a combined ‘heat and power’ plant (CHP) , reducing greenhouse effects

Disadvantages:

- It is the one of the more expensive options as an energy centre will be needed to house all the boilers, chp, hot water vessels and circulating pumps
- Heating and hot water trenches will be required to each block to provided heating and hot water to the homes
- Potential for heat losses in pipes before water gets to the flats

Option 4 – Electrical storage heating

Renew the existing electrical storage heaters with more modern and efficient controlled heaters

Advantages:

- Less disruption and the most cost effective of the 3 options to the tenants and leaseholders. basically, removal and install new heaters
- Electricity is still a renewable energy with limited greenhouse gas emissions

Disadvantages:

- Thestorage heater will release the most heat when the house is empty. To avoid that, you would have to charge your heater during the daily hours, thus losing out on the cheaper nighttimetariffs.

Other systems to consider:

Electric instantaneous water heaters - this could replace the cold and hot water tanks and cylinder in your kitchens (only for the all-electric system in conjunction with electric storage heating)

Electric towel radiators/warmers - in your bathroom instead of the existing electrical high level fan heaters. (This again is an option for the all-electric system. Water type towel radiators/warmers can be used for the other options)

Mechanical Ventilation Heat Recovery System (MVHR) - for filtered room ventilation and re-usable heat recovery in the removal of stale air in bathrooms and kitchens. Replacing the existing Mechanical Extract Ventilation (MEV) system which deals with bathrooms and kitchen extract air.

Heat Interface Units (HIUs) - will act as boiler providing domestic hot water and central heating from one unit in each of the high-rise flats.

PV panels (photovoltaic) - produces free electricty from the sun to power your home. Low-rise blocks only.

Combined heat and power (chp) - can produce additional electricity and heat that would otherwise go to waste.