

Lancaster West Neighbourhood Team

Heating and Hot Water Pilot September 2020

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Introduction

This report describes the data and insight gathered to help understand the issues with the current heating and hot water systems throughout Lancaster West Estate. The report will focus on the systems installed through the voids programme from August 2019 to May 2020 which are focused on the covered walkway properties. The voids programme has provided the opportunity to trial alternative heating and hot water solutions in different properties and gather feedback from the residents.

The primary heating supply serving the covered Walkway properties is fed via a temporary gas-fired boiler plant located within the confines of the hoarding on Whitchurch Road, W11. Most dwellings contain original Harton water tanks from the 1970's which are linked to the communal heating system.

We explored variety of domestic hot water and heating appliances, as well as smart thermostats.

Residents have expressed the following issues with the existing Harton units:

Takes up lots of space

High cost of running

Humidity in home

High temperature in cupboard and hallways e.g. around 45°C

No control of valves across whole home

Poor pressure for showers or baths

Resident requirements in a new system:

Reliability in terms of outages

Manageable bills

Manage the temperature of the home themselves

Environmentally friendly and low-carbon

Good water pressure, especially for the shower

Constant and consistent supply of hot water

Resident comments on the current heating system:

"The heating always fails in winter"

"When the heating is turned off it is difficult to get it back on. We always need an engineer to come out."

"When the heating is switched off you can still feel it around the house."

"In the summer the heat in the flat is unbearable, the flat is surrounded by pipes and you can feel the heat in all rooms."

"The pipes make a loud noise, not sure why or where this is coming from"





The goal of this document is twofold. It describes the process and data gathered to move forward with a new system. Equally, it reviews the appliances being installed in the current void programme and gathers feedback from the residents.

This report will summarise the heating and hot water pilot by addressing the following questions:

1. What is the current heating system?
2. What are the problems?
3. What was installed to address the problems?
4. What approach was used?
5. Why the approach changed?
6. What we are doing going forward?
7. What are the resident's thoughts?

It will also be analysing and reviewing the following systems to highlight why a system was chosen:

- **New Harton unit s**
- **Unvented cylinder**
- **Heat interface unit (HIU)**
- **Individual gas combi boiler**

Heating and hot water units	New Harton Unit	Unvented Cylinder	Heat Interface Units (HIU)	Individual Combi Boiler
Image				
Average Cost to install	~£2500	~£2500	£4125	~£2500
Average temp in tank cupboard	32.2	31.2	31.5	32.8
Average humidity in tank cupboard	42.7	41	40	42
EPC	TBC	TBC	6pt improvement	TBC
Who can maintain	Any plumber	Part P Plumber	Part P Plumber	Part P Plumber
Smart Thermostat compatible	Yes	Yes	Yes	Yes
Constant supply of hot water	No	Yes	Yes	Yes
High pressure shower	No	Yes	Yes	Yes
To be able to change and manage the temperature	Yes	Yes	Yes	Yes
Ease to operate	Easy	Quite easy	Very easy	Medium
Space taken	Most	Lots	A little	A little
Lifespan	10-15 Years	10-20 Years	15-20 years	15 years

Heating and Hot water systems to review:

Who we received advice from?

Advice was sought from the following companies:

- R.W. Building and Maintenance
- Engie
- TGA Consulting

What HIU did we install?

The Worcester Bosch Group, Greenstar HIU (with Heat meter included) was installed for the pilot programme.

Why HIU's?

Based on the reports submitted and the table above, HIU's were proposed to be the best option. Some of the reasons/advantages include:

- The most efficient method of providing DHW/ heating to multiple dwellings via an Energy Centre.
- Control unit for pre-set temperatures.
- Safety valves to ensure no possibility of scolding.
- Unit is fully insulated minimising heat loss and maximising efficiency.
- High pressure
- Little space taken

Where we installed them?

We installed the Heat interface units in the following voids:

1. 428 Barandon Walk
2. 417 Barandon Walk
3. 517 Barandon Walk
4. 304 Testerton Walk
5. 312 Testerton Walk
6. 315 Testerton Walk
7. 330 Barandon Walk
8. 448 Testerton Walk
9. 435 Hurstway Walk
10. 12 Camelford Court
11. 1 Camelford Court
12. 1 Upper Camelford Walk
13. 34 Clarendon Walk
14. 39 Upper Clarendon Walk

What problems came up and why?

Some residents in the above void properties highlighted the HIUs were not working, meaning they were left with no heating or hot water - or both.

After installation, it was discovered that the HIU's installed at scale would not be compatible with the estate wide communal heating system. This is because the flow of water is not currently large enough to supply the demand to the unit. HIU's require a minimum flow of 60 litres per hour and the current rate on the communal system is 25 litres per hour.

Currently, during the summer months, the flow of water is reversed within the primary system. The pipe work configuration within the dwellings is as such that non-return valves are forced closed which then prevents the flow of water through the radiators which effectively switches the heating off. The connections for the hot water cylinder are made ahead of the non-return valve allowing a flow of water through the coil of the hot water tank/cylinder to retain a supply of hot water whatever direction the flow of primary water may be travelling.

How we resolved it?

By installing a bridge control system that works on electrics, the flow of water can be manipulated and allow the HIUs to work on the current system. This was been tested on two properties before being rolled out.

How much we spent?

Pricing: (Please note that this is an Approx. costing)

Product	Cost
Worcester Bosch HIU (Revised rate for HIU install including nest control system)	£4,125
Return heating distribution pipework	£1,365
Bridge control system	£250

What conclusions were made

The report produced by TGA consultants reaffirm that although the HIU's have many advantages they will not be compatible under the current estate wide community heating system without manipulation and workarounds.

We have decided that going forward we will not be installing the HIUs, instead we will install unvented cylinders into the void properties. The cylinders unlike the HIUs can store water and create pressure, and will not require a constant demand or high flow rates.

Unvented cylinders will allow control of central heating and hot water in each dwelling by a single controller. This can be modern controllers such as Nest or Switchee.

What are the implications for the other properties on this system?

The current 14 properties with HIU's will not affect the other properties on the estate. However, if HIU's were to be continually installed the system will fail resulting in no heating and hot water. The communal system will not be able to supply the constant demand the HIU's require.

What are the next steps?

The next steps for the heating and hot water pilot will be:

- Moving forward we will install unvented cylinders into the void properties
- Explore low-carbon alternative that do not rely on a gas fire individual or communal system
- The installation of data loggers into the voids to see if the temporary boiler is causing issues
- Engaging with M&E specialists to consider the feedback from residents and incorporate this in block level design
- The installation of Air source heat pump (ASHP) in 50 Verity Close with PV
- Improve how we communicate the use of the Nest Smart Thermostats

Resident Engagement

24/36 residents who moved into the refurbished properties contributed by giving us feedback on the various heating and hot water appliances installed on the Lancaster West Estate.

The charts below highlight that 62% of the feedback was based on the Evocyl ThermaQ cylinder. By analysing this data, we can see that over 50% of the feedback on this heating and hot water system has been positive and over 70% would choose this system over the old one. This initial investigation has been positive and would encourage the continuation of installing unvented cylinders however, due to the minimal data on the other systems, we would look to gather further feedback moving forward.

Chart 1:

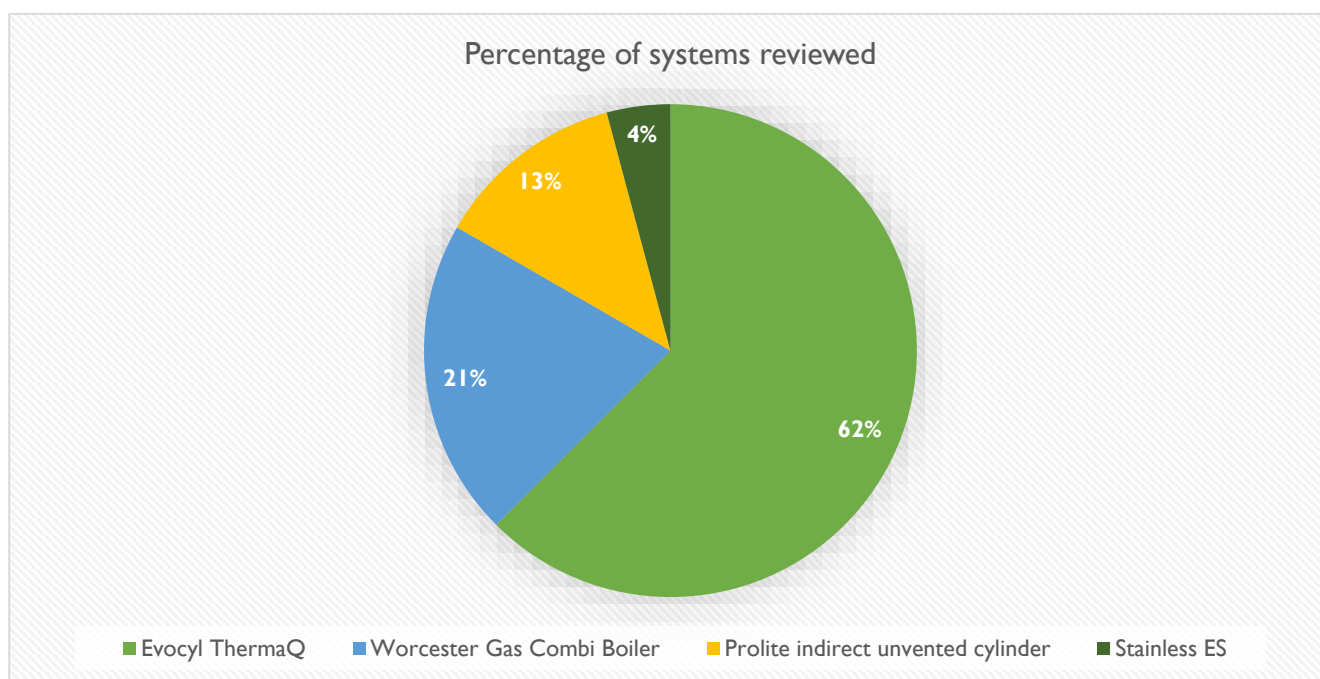


Chart 2:



Chart 3:

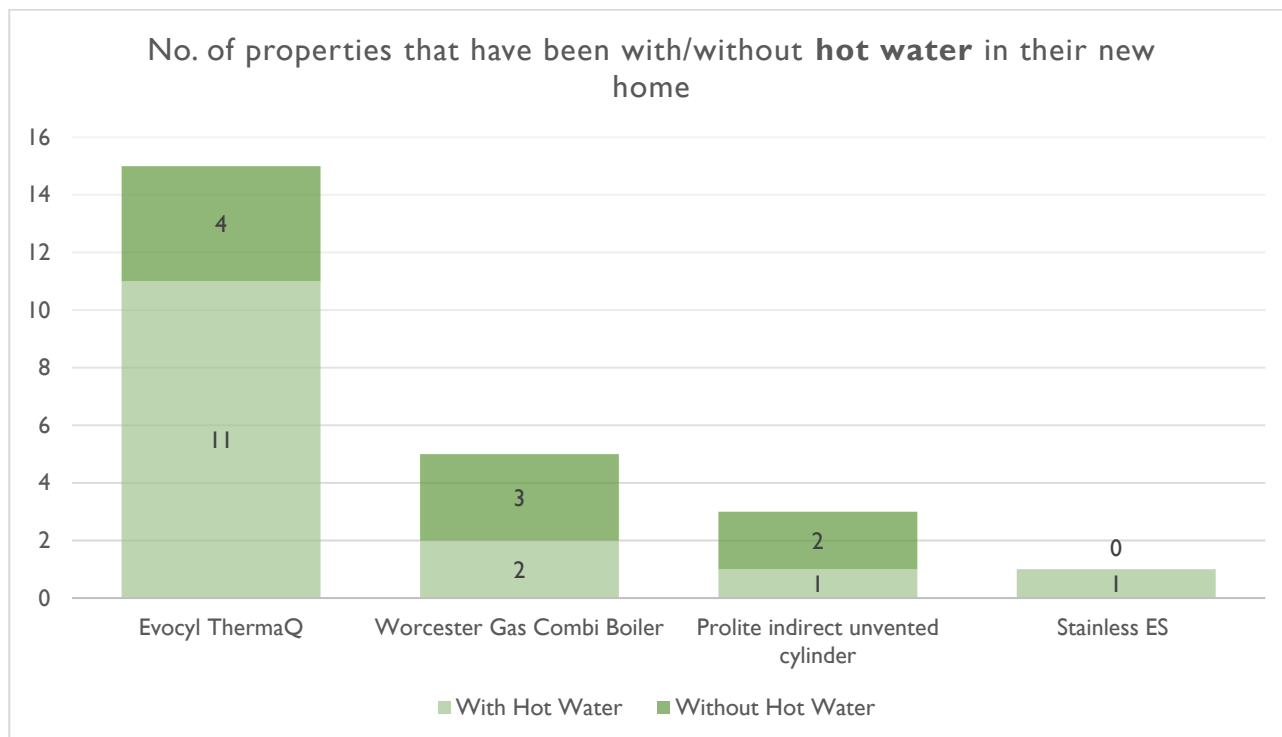


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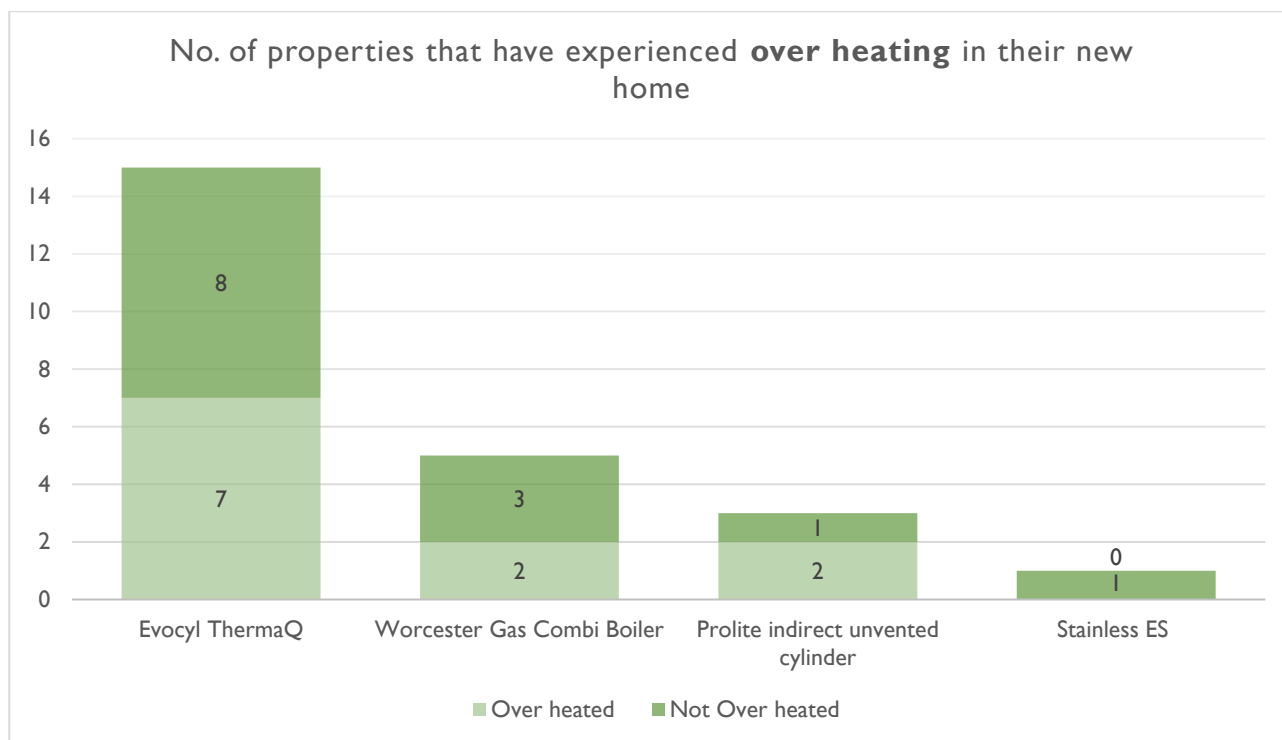


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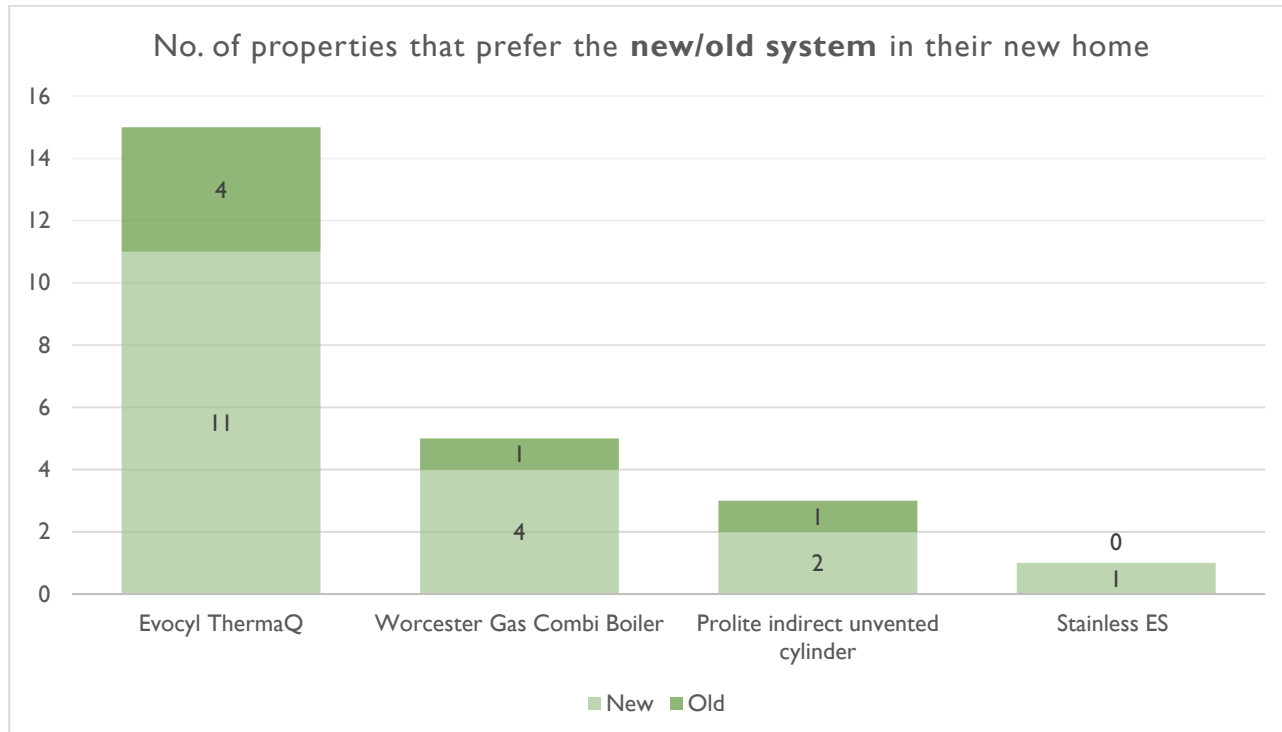


Chart 6:

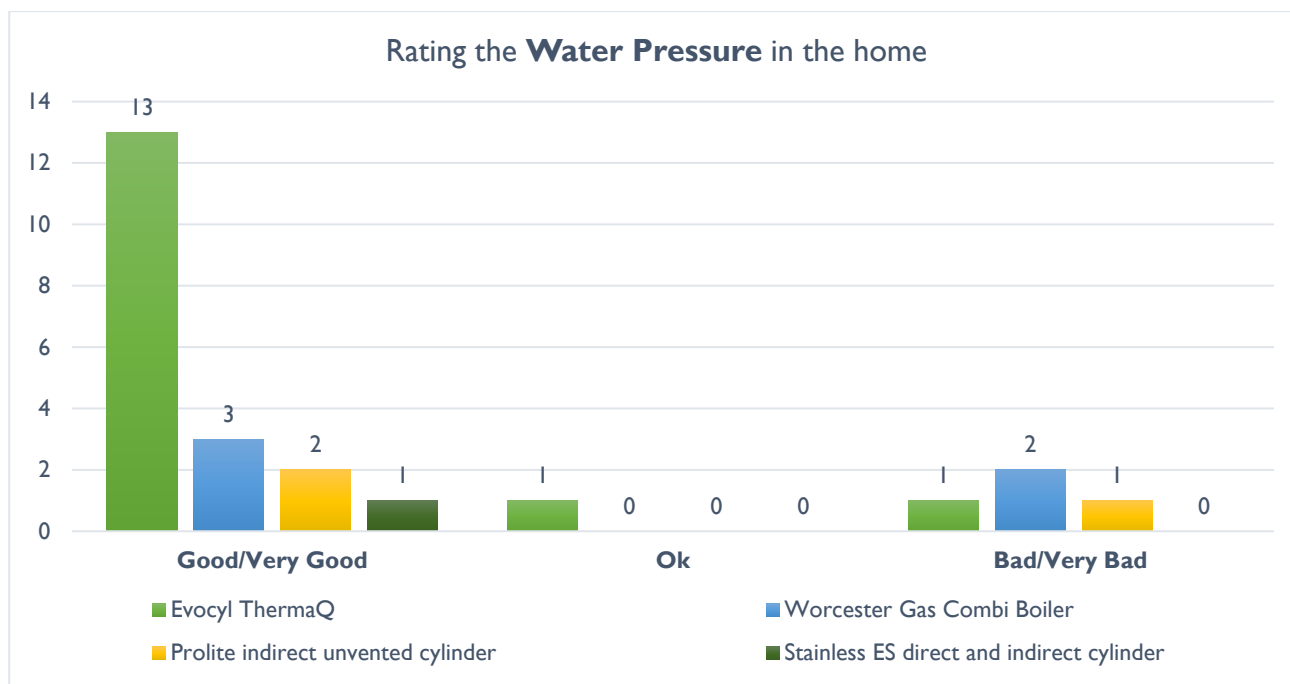
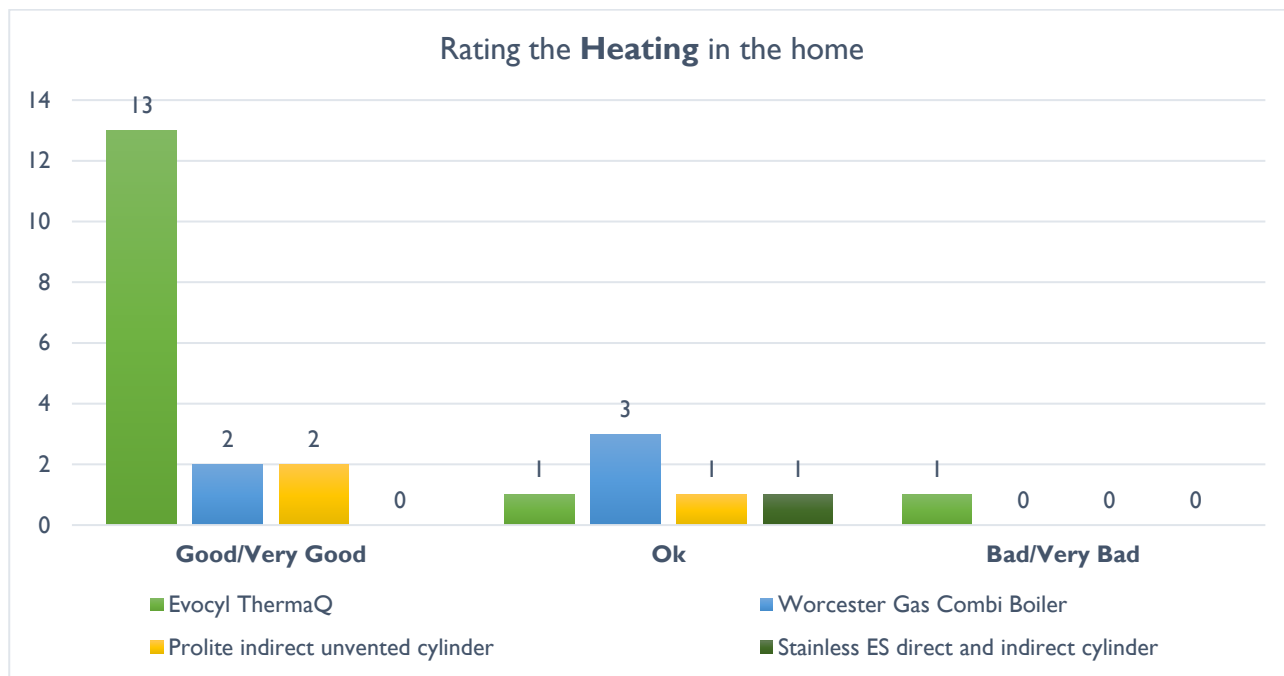


Chart 7:



Heating and Hot Water Results _ 61% response rate

Question	Percentage	
No of people who had been without heat in their new home	50%	
No of people who had been without hot water	50%	
No of people who described the water pressure in their home as very good/good/ok/bad/very bad	Good/Very Good	79%
	Bad/Very Bad	17%
	Ok	4%
No of people of who described the heating in their home as	Good/Very Good	71%
	Bad/Very Bad	25%
	Ok	4%
No of people whose homes got over heated	45%	
No of people who felt the <i>look</i> of their water tank was Very important/Important/Not important	Very Important/Imp	71%
	Not Important	29%
No of people who felt the <i>size</i> of their water tank was Very important/Important/Not important	Very Important/Imp	70%
	Not Important	30%
No of people who prefer the new heating system	75%	
No of people who found the smart thermostat easy to use	39%	
No of people who found the smart thermostat difficult	57%	<p>I resident hadn't used it yet because they only moved in a few months ago</p> <p>I resident said they didn't have one</p>

What people had to say about their experience of having a Nest thermostat

Remove it as it is a waste of resources. Also, when new tenants move in, there should be an expert showing us how to use it. Four so called “professional” came to try and demonstrate to us how to use it but they themselves didn’t know how.

Add air conditioning that works with the Nest, the only way to help cool down these flats. We need this in the refurb. Should have demos on how to use it as it could be complicated for some to understand.

It is great to have this to control the heating.

Was never given the instruction manual so can’t use it. Also, the thermostat has a code, which you need to scan to your mobile – have never been given the code despite asking a few times. No-one has ever got back to me. Without the code, can’t really operate the Nest so heating is operating itself.

I would like to know how to use it.

Sometimes my home heats up on its own. Had to switch off the auto schedule on Nest.

Think it would have been better without the Nest. Have found my home to rise to 30c. over-heating on its own. Make sure it works before resident moves in.

I had no heating and it turned out the problem was with the Nest thermostat, someone came and reset it. They fiddled with cylinder and then it started working.

Someone came up to show me how to use the Nest thermostat, but it still doesn’t work. I don’t use it, I find it easier to use the radiators. Has never worked since she moved in.

We are four elderly residents; someone should come and show us how to use the Nest thermostat and please ensure it is connected properly. Your booklet should come in different languages.

The Nest is difficult to understand. This thermostat has never worked. It says it’s on, but nothing happens. Doesn’t seem to be connected to the heating system. I would like this situation to be rectified. I would like to use the thermostat as advertised and I would like this situation to be resolved now. I feel I am not getting something I was promised.

I would like individual controls for each radiator on the Nest. Turning on one turns them all on. It should be easy to use or residents given information on it.

The Nest thermostat was working when we moved in, then a few months later had message indicating it needed to be charged. Then

it turned off on its own. Have tried to connect it up with Wi-Fi but that didn't work either.

It was on a timer but then stopped. Please make it as easy for people to use as possible we were given no instructions.

The Nest thermostat shouldn't be able to schedule itself. I've had to turn it off. It just doesn't work properly.

Still trying to figure the Nest out.

My thermostat seems to be acclimatised to outdoors. When it's hot outside the heating goes down automatically.

Can we make sure these thermostats are maintained going forward and not just left on the wall?

I have never used the Nest thermostat, find it really hard and complicated. Leaflet was not helpful.

What people had to say about their experience of their heating & hot water

When we initially moved in we didn't have heating for at least 8 months because the boiler pressure was faulty.

You can't use the water simultaneously on both floors because only a small amount of water comes out on one floor
When we switch on the heater hardly any heating is produced it is extremely weak. Also why is the heating switched off from May-October. This badly affects medical conditions, eg I suffer from arthritis.

Stop switching off the heating during the summer and give tenants the choice of whether to turn it off. Also, it would be good to have warm water coming out of the bidet. It is very cold.

I had intermittent problems with hot water running cold.
Some radiators were unable to be turned off, others not working, and the radiators emitted a loud banging noise at night
The water tank is unusually big in size, taking up a large cupboard space unnecessarily.

The hot water is at a scalding temperature and should be checked in all refurb properties before tenants move in as it's a cause for concern for the safety of children.

Flat is still hot due to the boiler location as it's in the front room.
Would have been better underneath the stair cupboards.
Not enough water for all family members to bathe one after another,

My heating and hot water is not working, yesterday a 3rd person came to my home to try and sought it out. I have been told that I have a unit that doesn't work with current block heating system

and that I need a new tank. But all of this has only happened since the communal heating was turned off centrally.

I now have intermittent hot water; it tends to be lukewarm.

Had a few problems when I first moved in.
My water pressure is very bad.

Heating & hot water is fine but please sort out the thermostat, this whole flat is a really sloppy job.

In the beginning the heating didn't work but a workman came into my home and corrected the error.

I had not hot water, but it turned out the switch at the bottom of the cylinder (appliance) was switch off.

My heating went off one day at 4.30pm, rang Baseline they said they'd send someone. No-one came and no-one came the next day. The hot water returned on its.

Now we have intermittent hot water. This household is 2 sets of elderly parents (4 OAPs). Sometimes when we use the shower, the water turns off in the kitchen sink (no water comes out at all).

We had no heating for about a month had to use an electric heater. The boiler gives us endless problems. We've also been without hot water; the mixer tap in the bath doesn't work properly, if opened too far goes cold. We would like a mixer tap on sink for health reasons.

Often during the night, the flat gets so hot we feel like we can't breathe

When I first moved in, I had no heating for a month. Then they did something in the boiler cupboard. Heating started working, but it operates heating via the radiators themselves.

Even with the heating off my home it gets unbearably hot. This can cause problems when you have even one other person in this studio flat.

In the beginning I had no heating, but it was fixed quickly.

When I first moved in it wasn't working properly, but it was fixed quite quickly. But we without hot water for several days. I was told that something was connected wrong and the boiler needed new parts.

It's way too hot in my home, my children and I are having to sleep in the front room downstairs. Needs to be addressed.

You should tell the tenant that there is an emergency switch on their system that they can turn off. I didn't know that there was a

switch. It was on and I had an extremely high bill because I had been using emergency heating and hot water. The switch is meant to be a backup in the event the communal system fails. It should have been off when I moved in. Otherwise feel the backup is a really good idea. It's just expensive when in use.

I love being able to control both the heating and hot water in my home.

When I first moved in I had no heating. Apparently, the main switch was switched off in the cupboard because of the Nest, which controls my heating. My Nest – has a switch in the cupboard that seems to control the heating & hot water throughout the flat.

The downstairs radiators make a lot of noise when turned on. The radiators upstairs in the hallway sometimes leaks onto the floor. My towel heater still makes lots of noise despite maintenance of several times

In the bathroom area as there is zero ventilation. The bathroom is now starting to get damaged due to the condensation – baseline has given me a humidifier that doesn't work. This is aggravating my daughters breathing – she already has chest issues this is making it worse. Bathroom is getting mouldy, skirting is becoming discoloured, doors are getting squeaky. My daughter struggles in the shower because of this issue, it's a nightmare.

This water pressure has gotten worse. If someone showers you need to wait 30 mins for the boiler to fill up; and now if we use the washing machine or kitchen sink or anything – we had low pressure in the bathroom in all faucets.

Takes a long time to get hot water in the wash basins.
It's too early to say much about my heating as I have not experienced a winter here.

All the radiators have a key apart from the main one in the living room, have been told I don't need a key for that one. But others seem to go off when they want.

In the bathroom when the hot water runs out I have to wait for an hour or 2 before I get any again. Hot water seems to run out every time I have a bath. I'd like to have still hot water after a bath. This was never a problem in my previous home. In my old home I had a smaller tank and endless hot water
On hot days it's unbearable – gets suffocating and difficult to stay indoors

I was without heating for a week then it was fixed. I had intermittent hot water. It took several visits to resolve the problems and I was given a lot of differing reasons why it was happening.

The water tank must refill so I have to wait for the tank to refill and warm up. No continuous hot water. I have to time when I'm going to have a bath, shower and wash dishes.

In my previous home I had a small boiler, could adjust temperature and had continuous hot water

I have a studio flat, that gets really hot, there is no air flow

Had to have an engineer in to sort out the heating in the first week.

My bathroom, even when the towel rail heater is off, gets unbearably hot, and I need to leave the door open. Because it makes you dizzy it's so hot.

When my radiator is on, I hear a loud knocking and lots of vibrating at highest level have to keep heating on 4. Also, the tank is too large.

When I switch on the cold tap, very hot water comes out for about 1 minute then it runs cold and this has only recently, this is from all faucets including the bidet and kitchen.