Report date: 03/23/2026

WMR/INST/2512/003

Split Test

For

Kim Smith

16 Test Street

PE3 6GA

Prepared by

Warmur

YOUR NEW LOW-CARBON HEATING SYSTEM

Warmur Energy Passport

Dear Kim Smith,

This report outlines the key findings from your Warmur Energy Passport and explains example changes required to upgrade your new heating system. It shows how your home loses heat, and how your new heating system could delivers heat to keep you warm on the coldest expected day.

I'm sure you'll have questions about what's here, and I look forward to taking you through this design on a call.

Warm regards,

DESIGN CONDITIONS

Your Home's Heating Made Simple

Heating Needs

We have calculated the peak heating demand of your home to be 13.4 kW. This is based on heating your home to a comfortable temperature throughout the year, usually between 18-22°C for most people. We have allowed for temperatures as low as -4.6 °C, which is colder than 99.6 % of hours in a typical meteorological year for PE3 6GA.

Hot Water

Your heating system will have a 180 litre hot water cylinder. When all of the hot water has been used, it will take around 39 minutes to be reheated to a suggested temperature of 50 °C.

Efficiency

We forecast that your new heating system will run at a Seasonal Performance Factor (SPF) of 3.6. This means that over the course of a full calendar year, your heat pump will generate 3.6 times more heat energy than it consumes in electricity, to heat your home.

This forecast is determined by the capabilities of the heat pump (Grant Aerona R290 15.5kW), the maximum temperature at which we've designed the water to flow through your heating system (50 °C), the temperature to which your home is heated (16 - 22 °C), and the expected climatic conditions where you live. The actual efficiency will be impacted by usage patterns - for example if your hot water usage is greater than expected.

Energy Usage

The total amount of heat energy required to maintain your home at a comfortable temperature throughout the year is 30047 kWh. The total amount of heat energy required to supply hot water needs for 4 occupants is 3821 kWh

In total, your heat pump is expected to produce around 33868 kWh of heat over a calendar year, which will require 9494 kWh of electricity.

Bills

If you purchase all of your electricity using a standard variable electricity tariff at today's OFGEM Energy Price Cap of 24.5p (correct as at 09 August 2024), then your combined heating and hot water costs for the year would be £ 2,326.03. There are many innovative energy tariffs available which can help to reduce this cost. Additionally, if you will be generating your own electricity, your costs will likely be significantly lower than this. Talk to us about how to minimise your bills further using tariffs, solar panels or batteries.

If you are in a position to disconnect a mains gas supply you can also save an additional £160 per annum of standing charges (contact your energy supplier to discuss this).

Notes

The performance of Micro-generation heat pump systems is impossible to predict with certainty due to the variability of the climate and its subsequent effect on both heat supply and demand. This estimate is based upon the best available information but is given as guidance only and should not be considered as a guarantee. The time forecast for replenishing your hot water tank assumes a water inlet temperature of 11C.

UPCOMING CHANGES

Your New Heating System Plan

Projected Heat Pump

Based on your home's size and heat loss, we've selected a heat pump that's the right fit for your property. It's designed to efficiently meet your heating and hot water needs while helping lower your energy bills and carbon footprint.

Grant Aerona R290 15.5kW

15500 watts
Max Output

3.6
SCOP at 50°C

W 1155 x H 1365 x D 425 cm
Dimensions

R-290
Refrigerant

Emitters

Heat pumps are far more efficient than fossil boilers. The maximum efficiency is achieved when they operate at lower radiator temperatures. However, heating design is a balance between efficiency, comfort and cost. Where possible, we'll reduce cost and waste by relocating existing radiators.

11 Radiators
Remain at place

2 Radiators
Upgraded with new ones

1 Radiators
Added to new locations

1 Rooms
Are heated with underfloor heating

Performance

13.4 kW 116 %

Heat Loss

14.3 kW 107 %

Emitters Output

ABOUT YOUR HOME

Heat Loss Details

Heat loss is the warmth your home loses through walls, windows, floors, and roof. Understanding how your home loses heat is key to selecting the right heat pump, ensuring that you will be comfortable throughout the year.

Breakdown

The chart below shows a breakdown of where heat escapes and helps identify where improvements could make the biggest difference. Ventilation losses are a reflection on how draughty your home is. The average UK home losses around 25-30% of its heat through air movement.

Heat Loss

13.4 kW

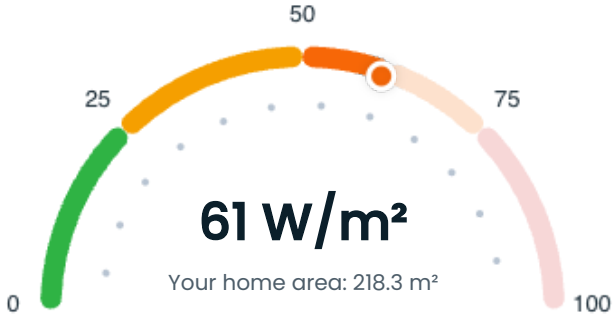
Element	Heat Loss
Ventilation	4.59 kW 34%
Timber Frame Stud Wall (140mm insulation) Current Building Regulations (2022) - New Build **Wall**	1.28 kW 10%
Solid Wood Internal Door High Quality Door 50% glazing **Door**	0.15 kW 1%
Fully double glazed **Window**	2.68 kW 20%
Solid, no insulation (assumed) **Floor**	3.4 kW 25%
Pitched, 100 mm loft insulation **Ceiling**	1.28 kW 10%

Heat Loss per Square Metre

Your home loses around 61 watts per square metre, which is fairly typical for UK homes.

✓ Great News!

Most of the heating systems we fit fall into this range. We'll definitely be able to install a heat pump that keeps you toasty on the coldest day.



Heat Loss per Room

Below you can see details about each of the rooms in the design, including the heat required to keep each room comfortable on the coldest day. Use the heat loss per square meter column to quickly spot which rooms are the least energy-efficient. As part of the design, we'll propose upgrading or adding radiators to ensure you've got plenty of power in each room to be comfortable.

ROOM	FLOOR	AREA	TEMPERATURE	HEAT LOSS [W]	[W/m²]
Master bedroom en suite	1	4 m²	22 °C	**394**	103
Living room	0	28 m²	21 °C	**2,553**	91
Playroom	0	24 m²	21 °C	**2,026**	85
Dining room	0	14 m²	21 °C	**1,077**	75
Kitchen	0	28 m²	18 °C	**1,826**	65
Office	0	6 m²	21 °C	**396**	65
FF Bathroom	1	6 m²	22 °C	**380**	61
Utility	0	8 m²	18 °C	**459**	57
GF Hall	0	18 m²	18 °C	**924**	53
FF Landing	1	18 m²	18 °C	**920**	51
GF WC	0	2 m²	18 °C	**90**	49
Master bedroom	1	21 m²	18 °C	**838**	41
Bedroom 2	1	15 m²	18 °C	**608**	41
Bedroom 3	1	12 m²	18 °C	**435**	37
Guest bedroom	1	14 m²	18 °C	**467**	32
Plant	1	0 m²	16 °C	**-13**	0
TOTAL		218 m²		**13,380**	

PROPOSED CHANGES

Heating System Design

This plan shows where your new heat pump and hot water cylinder might be sited, as well as identifying possible radiators - both existing and upgraded.

Floor 0

Emitters on Floor 0

We've analysed each room in turn. Whilst some rooms will have sufficient radiator power already, others may require a radiator to be upgraded to a higher power unit.

Sometimes, due to wall space or for other reasons, we might propose adding an additional radiator to a room to ensure there is sufficient power.

Overall, we've taken care to balance the disruption of replacing radiators with the desire to put in place an efficient heating system

Remember these are only suggestions of what will work and can be discussed further with us or with your installer.

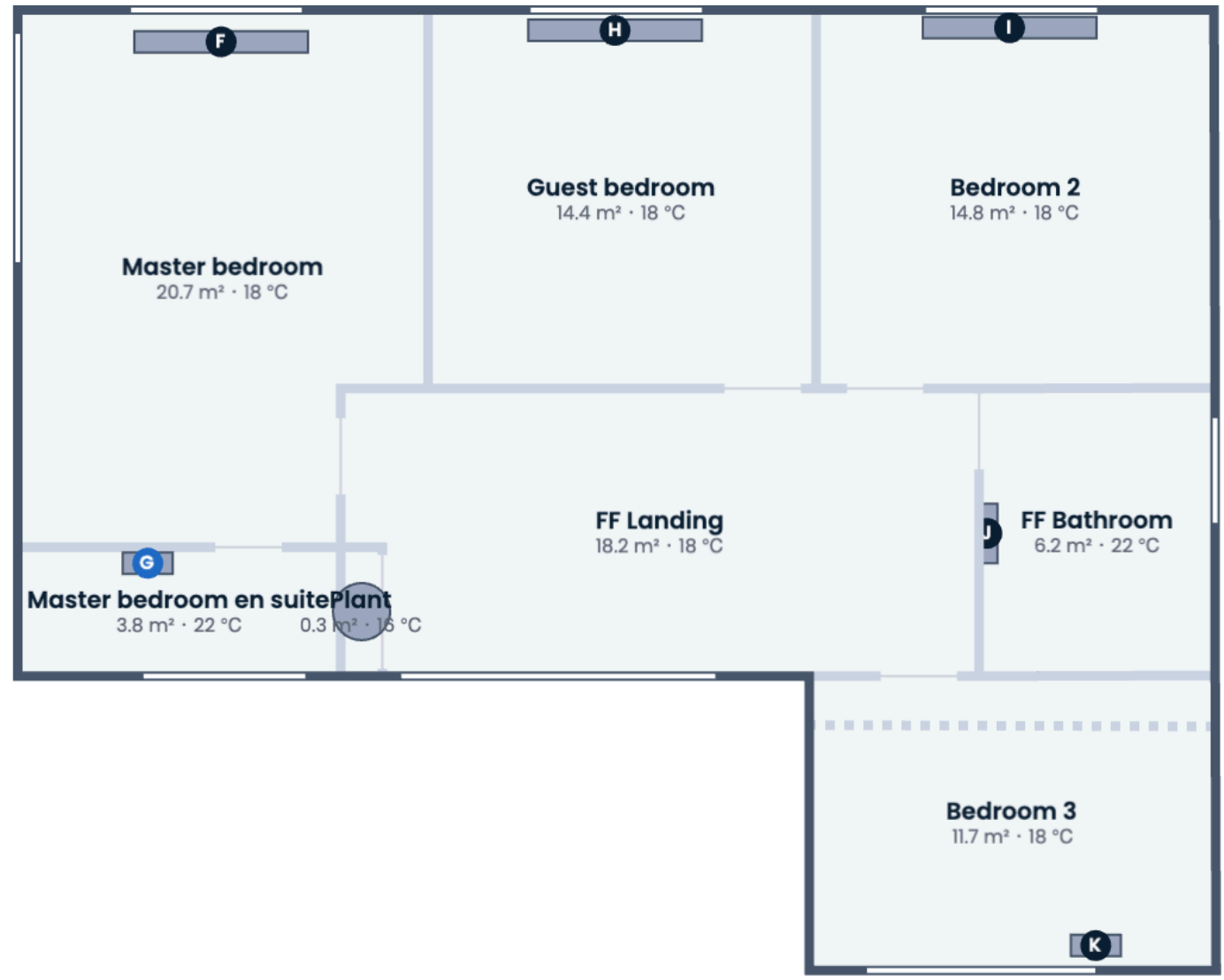
	Heat Needed [W]	Heat Produced [W]	
Floor 0	**9,350**	**-**	100 %
Dining room	**1,077**	**1,544**	143 %
C Panel Keep existing radiator		1544	100 %
GF Hall	**924**	**1,260**	136 %
D Column Keep existing radiator		630	50 %
L Column Keep existing radiator		630	50 %
Playroom	**2,026**	**2,075**	102 %
E Panel Keep existing radiator		1240	60 %
Q* Panel NEW INSTALL New radiator added, Type 22, H600 W1100		835	40 %
Living room	**2,553**	**2,598**	102 %
B Panel Keep existing radiator		880	34 %
Panel UPGRADED		1718	66 %

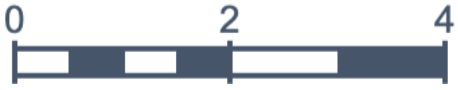
	Heat Needed [W]	Heat Produced [W]	
New radiator in the same location, Type 22, H700 W2000			
Kitchen	**1,826**	**-**	**100 %**
UFH Wet		-	**100 %**
Office	**396**	**0**	**0 %**
Utility	**459**	**0**	**0 %**
GF WC	**90**	**0**	**0 %**

PROPOSED CHANGES

Heating System Design

Floor 1





Emitters on Floor 1

	Heat Needed [W]	Heat Produced [W]	
Floor 1	**4,030**	**4,959**	**123 %**
Master bedroom	**838**	**868**	**104 %**
F Panel Keep existing radiator		868	100 %
FF Bathroom	**380**	**229**	**60 %**
J Towel rail Keep existing radiator		229	100 %
Bedroom 2	**608**	**1,590**	**261 %**
I Panel Keep existing radiator		1590	100 %
FF Landing	**920**	**0**	**0 %**
Master bedroom en suite	**394**	**240**	**61 %**
G Towel rail UPGRADED New radiator in the same location, H1211 W500		240	100 %
Bedroom 3	**435**	**442**	**102 %**
K Panel Keep existing radiator		442	100 %
Guest bedroom	**467**	**1,590**	**340 %**
H Panel Keep existing radiator		1590	100 %
Plant	**-13**	**0**	**0 %**