

Energy Statement

Parker Collins House, Portsmouth Road, Ripley, Surrey, GU23 6JA

Rushmon Homes

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1. Assessment Information

Project Name	Parker Collins House, Ripley
Project Address	Parker Collins House, Portsmouth Road, Ripley, Surrey, GU23 6JA
Developer	Rushmon Homes
Developer Address	2 Esher Rd, Hersham, KT12 4JY
Architect	Taylor Cox Associates Limited
Architect's Address	Dorset House, 297-299 Kingston Road, Leatherhead, KT22 7PL
Project Description	Erection of 6 x 3 bed semi-detached houses, 1 x 3 bed detached house and 2 x 4 bed detached houses with integral single garage, together with associated parking and new access off Send Marsh Road following demolition of existing house and outbuilding.

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lssue Number	Author	Date	Reason
01	MB	15/12/23	Initial Issue
02	MB	22/12/23	Update to Waste Section
03			
04			

This document has been prepared for Rushmon Homes only and solely for the purposes expressly defined herein. We owe no duty of care to any third parties in respect of its content. Therefore, unless expressly agreed by us in signed writing, we hereby exclude all liability to third parties, including liability for negligence, save only for liabilities that cannot be so excluded by operation of applicable law. The consequences of climate change and the effects of future changes in climatic conditions cannot be accurately predicted. This report has been based solely on the specific design assumptions and criteria stated herein.



2. EXECUTIVE SUMMARY

This document has been prepared by Abbey Consultants (Southern) Ltd, a specialist environmental and energy consultancy on behalf of Rushmon Homes, to accompany a planning application for the provision of 9 new residential dwellings at Parker Collins House, Ripley, Surrey.

The proposals seek approval for the construction of 6 x 3 bed semi-detached houses, a detached 3 bed house and 2x detached 4 bed houses together with associated parking and new access off Send Marsh Road, following demolition of existing house and outbuildings.

The development is classed as a non-major residential development by Guildford Borough Council as it is below their 10 dwellings threshold for planning applications to be considered major developments.

The proposed strategy has been based around the relevant planning objectives of Guildford Borough Council, with the aim of achieving compliance with Building Regulations Part L 2021.

This report considers sustainability and includes an assessment of the predicted CO_2 demand for the proposed development. In the formulation of this strategy, much consideration has been given to minimising the carbon emissions of the proposed development, and to ensure the development is constructed to rigorous sustainability standards.

In keeping with the requirements of Guildford Borough Council, and Building Regulations Part L 2021, this report comprises of the following:

- A Building Regulation baseline energy assessment for the proposed development.
- Energy conservation measures to be undertaken in the design of the development.
- A calculation of CO₂ savings that are to be achieved as a result of energy efficiency measures.
- An appraisal of the potential options for on-site renewables or low and zero carbon technologies.
- An outline specification of the proposed water efficiency measures to limit the internal water usage of each dwelling to less than 110 litres per person per day.

The development will reduce regulated CO_2 emissions by integrating a range of passive design and energy efficiency measures throughout the building. These measures include improving building fabric standards beyond the requirements of Part L 2021 of the Building Regulations. These measures enable the proposed scheme to go beyond Target Emission Rates (TER) and Target Fabric Energy Efficiency (TFEE) minimum standards via energy efficiency measures alone. This is in line with the requirements of Guildford Borough Council's Policy D16-Criteria (4).

Following reduction of the energy demand and CO_2 emissions through fabric and energy efficiency improvements, the 'Be Green' stage of the energy hierarchy details that highly efficient individual Air Source Heat Pumps ASHP technology will be utilised to provide both the space heating and hot water demands of the houses.

All of the measures detailed herein combine to see a saving of 8.25 tonnes of CO₂ per year compared to the Building Regulations Part L 2021 baseline. This represents a 67% reduction and adheres to the adopted planning policy requirements of Guildford Borough Council

A summary of the overall reduction in CO_2 emissions after each stage of the energy hierarchy is summarised in the table below.

Table 1: Energy Strategy Carbon Emissions Summary

Stage of Energy Hierarchy	Regulated CO ₂ Emissions (tonnes/year)
Total Baseline	12.26
Total After 'Be Lean'	12.11
Total After 'Be Green'	4.01
Total Saving	8.25
Total Improvement	67%

Finally, the fabric specification detailed within this energy strategy ensures that the average Dwelling Fabric Energy Efficiency improves upon the average Target Fabric Energy



Efficiency (as defined by Building Regulations Part L1 (2021) by 4%. This is detailed within the table below.

Table 2: Residential FEE Performance

Element	Target Fabric Energy Efficiency (TFEE) kWh/m ² /year	Dwelling Fabric Energy Efficiency (DFEE) kWh/m ² /year	Improvement (%)
Residential Total	39.30	37.61	4%

Energy and Sustainability Summary

The strategy achieves and meets the following requirements:

- Maximises the energy efficiency performance of the building fabric, in accordance with the energy hierarchy.
- The fabric energy efficiency (DFEE) achieves a 4% reduction over the minimum standards defined by Building Regulations Part L1 2021 (TFEE).
- Minimises carbon dioxide emissions further at the 'Be Green' stage of the energy hierarchy by utilising heat pump technology in the form of efficient individual ASHP to meet both space heating and hot water of the houses.
- Reduces a total estimated 8.25 tonnes of CO₂ compared to the Part L 2021 baseline. This equates to a 67% saving. This is in line with the requirements of Guildford Borough Council's Policy D16-Criteria (4).
- In keeping with the requirements of Guildford Borough Council's Policy D2-Criteria 1d of their Local Plan (adopted April 2019), this strategy details a specification of water efficiency measures which meets the highest national standard.
- The proposals detailed herein include sustainable construction techniques and standards in line with National and Guildford Borough Council's planning policy requirements.
- Complies with all of the main compliance criteria required by Part L 2021 of the Building Regulations.



3. INTRODUCTION

This document has been prepared by Abbey Consultants (Southern) Ltd, a specialist environmental and energy consultancy on behalf of Rushmon Homes.

The following report establishes a baseline assessment of the energy demands and associated CO_2 emissions for the development. The energy hierarchy approach of Be Lean, Be Clean and Be Green is then followed to ensure the maximum viable reductions in energy and regulated CO_2 emissions is achieved.

The proposed development is described as:

Erection of 6 x 3 bed semi-detached houses, 1 x 3 bed detached house and 2 x 4 bed detached houses with integral single garage, together with associated parking and new access off Send Marsh Road following demolition of existing house and outbuilding.

The report takes into consideration the layout, use and requirements for the development to recommend a strategy that integrates the most suitable technologies available that are commercially viable, whilst also adhering to the requirements of Building Regulations, and the relevant national and local planning policies.

Figure 1 presents the proposed site layout.

Figure 1: Site Plan





4. PLANNING POLICY

4.1 NATIONAL PLANNING POLICY FRAMEWORK (NPPF) 2023

The NPPF sets out the Government's planning policies for England and how these are expected to be applied. It sets out the Government's requirements for the planning system only to the extent that it is relevant, proportionate, and necessary to do so. It provides a framework within which local people and their accountable councils can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities.

Chapter 14 Meeting the challenge of climate change, flooding and coastal change

The following paragraphs set out the Government's position in response to reducing carbon emissions:

Paragraph 154: New development should be planned for in ways that:

- a. avoid increased vulnerability to the range of impacts arising from climate change.
 When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and
- b. can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.

Paragraph 155: To help increase the use and supply of renewable and low carbon energy and heat, plans should:

- a. provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);
- consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and
- c. identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating

potential heat customers and suppliers.

Paragraph 156: Local planning authorities should support community-led initiatives for renewable and low carbon energy, including developments outside areas identified in local plans or ither strategic policies that are being taken forward through neighbourhood planning.

Paragraph 157. In determining planning applications, local planning authorities should expect new development to:

- a. comply with adopted Local Plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and
- b. take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.

Paragraph 158: When determining planning applications for renewable and low carbon development, local planning authorities should:

- a. not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and
- b. approve the application if its impacts are (or can be made) acceptable. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas, and
- c. in the case of applications for the repowering and life-extension of existing renewable sites, give significant weight to the benefits of utilising an established site, and approve the proposal if its impacts are or can be made acceptable.



4.2 LOCAL POLICY

Guildford Borough Council Guildford Borough Local Plan Strategy & Sites Adopted -April 2019-Plocy D2 updated in March 2023

POLICY D2: Climate Change, sustainable design, construction, and energy D2 criteria (5), (6), (7) and (9) have been superseded by LDMP Policy D16 Criteria (1), (2), (3) and (4)

Sustainable design and construction

(1) Proposals for zero carbon development are strongly supported. Applications for development, including refurbishment, conversion and extensions to existing buildings should include information setting out how sustainable design and construction practice will be incorporated including (where applicable):

(a)the efficient use of mineral resources and the incorporation of a proportion of recycled and/or secondary aggregates

(b)waste minimisation and reusing material derived from excavation and demolition. (c)the use of landform, layout, building orientation, massing, and landscaping to reduce energy consumption.

(d)water efficiency that meets the highest national standard and

(e)measures that enable sustainable lifestyles for the occupants of the buildings, including electric car charging points.

(2) When meeting these requirements, the energy and waste hierarchies should be followed except where it can be demonstrated that greater sustainability can be achieved by utilising measures further down the hierarchy.

(3) Major development should include a sustainability statement setting out how the matters in this policy have been addressed. Smaller developments should include information proportionate to the size of the development in the planning application.

Climate Change Adaptation

(4) All developments should be fit for purpose and remain so into the future. Proposals for major development are required to set out in a sustainability statement how they have incorporated adaptations for a changing climate and changing weather patterns in order

to avoid increased vulnerability and offer high levels of resilience to the full range of expected impacts.

Climate change mitigation, decentralised, renewable and low carbon energy

(8) All (C)CHP* systems are required to be scaled and operated in order to maximise the potential for carbon reduction. Ensuring all new development, including residential extensions, include measures to minimise energy and water use through its design, layout, landscape, and orientation.

(10) Retail units falling within Use Classes A1, A2, A3 and A4 in Guildford Town Centre are not subject to the carbon reduction requirement at paragraph (9).

(11) Planning applications must include adequate information to demonstrate and quantify how proposals comply with the energy requirements at paragraphs 5-10of this policy. For major development, this should take the form of an energy statemen.

Guildford Borough Council

Guildford Borough Local Plan Development Management Policies (LPDMP) Adopted: - March 2023

POLICY D16: Carbon Emissions from Buildings

1)The development of low and zero carbon and decentralised energy, including low carbon heat distribution networks, is strongly supported, and encouraged.

2) Where low carbon heat distribution networks already exist, new developments are required to connect to them or be connection-ready unless it can be clearly demonstrated that utilizing a different energy supply would be more sustainable or connection is not feasible.

3) Proposals for development within Heat Priority Areas as shown on the Policies Map and all sufficiently large or intensive developments must demonstrate that low carbon heat networks have been given adequate consideration as the primary source of heat.

4) New buildings must achieve an emission rate no higher than the relevant Target Emission Rate (TER) set out in the Building Regulations (Part L).

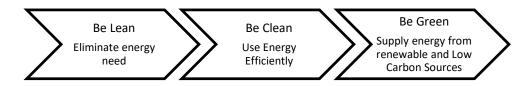


5) Development proposals are strongly encouraged to improve upon the standards in paragraph 4.



5. ENERGY STRATEGY APPROACH

The proposed energy strategy follows the established and widely accepted Energy Hierarchy of eliminate energy need (Be Lean), Use energy efficiently (Be Clean) and supply energy from renewable and low carbon sources (Be Green) to enable the maximum viable reductions in regulated and total CO_2 emissions over the baseline.



The proposed energy supply solutions aim to match energy profiles of the development ensuring effective use. The proposed solutions consider viability and flexibility of the scheme from both a technical and economic point of view by identifying best combination of energy efficiency measures as well as decentralised and renewable or low and zero carbon technologies (LZC).

Using these principles, Rushmon Homes will deliver the following objectives:

- Comply with the relevant regulatory requirements.
- To reduce energy and CO₂ demand through fabric and energy efficiency measures.
- To propose to reduce energy consumption and carbon dioxide emissions further through the use of on-site renewable or low and zero carbon technologies (LZC),
- Incorporate a number of construction practices and measures to ensure sustainability will be incorporated including waste practices, environmental pollution management and material sourcing.

5.1 ENERGY AND CARBON ASSESSMENT METHODOLOGY

Elmhurst Energy software, which uses the Standard Assessment Procedure (SAP) 10.2 methodology to assess compliance with Part L1 2021, has been used to evaluate an initial CO₂ performance of all dwellings. To assess energy performance of the entire residential development, an energy and carbon assessment model has been produced, which extrapolates the results of the SAP analysis using the floor area weighted average method detailed within Part L1 2021 to predict the energy consumption and CO₂ performance of the residential development.

Although the produced data detailed within this report provides estimations of possible energy and carbon performance of the development, it is not intended to be used as a detailed design tool.



6. BASELINE CO₂ EMISSIONS

In order to assess the energy demand and CO_2 performance of the proposed energy strategy, a baseline needs to be established. This section sets out the approach taken to calculating the baseline CO_2 emissions for the development.

The total baseline CO_2 emissions for the proposed development is defined as regulated CO_2 emissions, which is covered by Building Regulations Part L. Regulated CO_2 emissions are calculated from the CO_2 emissions associated with space heating, hot water and fixed electrical demands (for lights, fans and pumps).

Unregulated CO_2 emissions are those that are associated with appliances. Unregulated CO_2 emissions are not covered by Part L and are therefore not included as part of the assessment detailed within this energy strategy.

CO₂ Conversion Factors have been applied in accordance with the requirements of Building Regulations Part L 2021. These were detailed in the previous section of this report.

6.1 SAMPLE SAP UNITS

The baseline CO_2 emissions for the proposed development are based on the Part L1 2021 Target Emission Rate (TER) performance of all 9no. dwellings. The baseline CO_2 performance has been determined by carrying out SAP 10.2 modelling to establish the TERs of the dwellings. The TER sets a minimum allowable standard for the energy performance of a building and is defined by the annual CO_2 emissions of a notional building of the same type, size and shape to the proposed building. The specification of the notional building used to calculate the TER is defined within Building Regulations Part L1 2021. The dwellings presented in the following table were used to carry out the SAP assessment.

Table	3: SAP	Dwellings
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Sample SAP Type Reference	No. of Units
Plot 1-3Bed 6Person House-Semi-Detached	1
Plot 2-3Bed 6Person House-Semi-Detached	1
Plot 3-3Bed 6Person House-Semi-Detached	1
Plot 4-3Bed 6Person House-Semi-Detached	1
Plot 5-3Bed 6Person House-Semi-Detached	1
Plot 6-3Bed 6Person House-Semi-Detached	1
Plot 7-3Bed 6Person House-Detached	1
Plot 8-4Bed 7Person House-Detached	1
Plot 9-4Bed 7Person House-Detached	1
Total	9

The TER worksheets of the dwellings can be found in the appendices. The TER results of the SAP assessments from all dwellings have been extrapolated using a weighted average method to predict the baseline.



6.2 TOTAL BASELINE

The total baseline CO_2 emissions for the development are summarised below.

Table 4: Total Baseline CO₂ emissions

Stage of Energy Hierarchy	Regulated CO ₂ Emissions (tonnes/year)
Part L1 2021 Baseline	12.26



7. PASSIVE DESIGN AND ENERGY EFFICIENT MEASURES (BE LEAN)



In accordance with the Energy Hierarchy, the energy demands of the development should be reduced as much as practically viable, prior to considering low carbon or renewable measures.

A range of measures to reduce CO_2 emissions and increase resilience to climate change are proposed in the building design including good building fabric standards as well as energy efficient M&E systems and lighting.

7.1 PASSIVE DESIGN

The development will incorporate a range of passive design measures and energy efficient building fabric that will reduce the demand for space heating, ventilation, and artificial lighting.

Passive design utilises daylight, solar energy and shading to illuminate, heat and shade where necessary and ventilate/cool the buildings using thermal mass and cross ventilation, for natural cooling of the dwellings, thus requiring less (mechanical) energy to achieve the performance standards for the health and wellbeing of the occupants.

Natural ventilation has been considered but is judged to be inappropriate due to the high energy efficiency requirements and the CO_2 reduction target. Therefore, efficient decentralised mechanical ventilation has been specified as a more suitable approach to extract air from the dwellings to prevent the accumulation of moisture and prevents condensation and mould growth.

The ventilation strategy will be reviewed again and developed as the design progresses to ensure compliance with all the relevant regulations and standards. Should certain elevations be affected by noise issues restricting the opening of windows, enhanced mechanical ventilation will be introduced to reduce the risk of overheating. It is assumed, in this scenario, that all windows can still be opened (albeit intermittently) for purge ventilation. The proposed glazed areas have been designed to maximise daylight and optimise solar gains. The glazing specification has been reviewed to ensure that they provide a balance between solar control and solar gain.

7.2 BUILDING FABRIC

To reduce demand for space heating, emphasis has been placed on a Fabric First Approach by providing a very high standard of fabric efficiency and reducing heat loss through the building envelope. Approved Document Part L1 2021 sets out the limiting fabric parameters for each of the building elements. Each stated value represents the area-weighted average U-value. The following table details the proposed U-values to be used in the described exposed element within the fabric of the development.

Table 5: Proposed Fabric Specification

Element	Part L1 2021 Minimum Fabric Requirements	Proposed Specification
Ground Floor	0.18 W/m ² K	0.12 W/m²K
External Wall	0.26 W/m ² K	0.19 W/m²K
Party Wall	0.20 W/m ² K	0.00 W/m²K
Roof – insulated at ceiling	0.16 W/m ² K	0.10 W/m²K
Roof – insulated at slope	0.16 W/m ² K	0.13 W/m²K
Terrace Roof	0.16 W/m ² K	0.13 W/m²K
Bay Roof		0.15 W/m²K
		U = 1.20 W/m ² K
Windows/Bifold Doors	1.60 W/m²K	G = 0.43
		BFRC Certificate
		U = 1.20 W/m ² K
Dormer Windows	1.60 W/m²K	G = 0.63
		FF=0.70
Doors	1.60 W/m ² K	1.0W/m²K
Air Permeability	8.0m ³ /h/m ² @50Pa	4.00m ³ /h/m ² @50Pa



Recognised Construction Details (RCD) for all wall junctions will be specified to minimise the effects of non-repeating thermal bridging and reduce heat loss further in all possible junctions. By specifying and ensuring that Recognised Construction Details are designed into the build, CO_2 emissions can be greatly reduced. In addition, it is proposed that all openings will have Hi-Therm lintels installed to maximise thermal efficiency.



7.3 ENERGY EFFICIENT SYSTEMS

Energy efficiency can be significantly reduced by using energy efficient M&E systems. The recommended indicative energy efficiency measures for the proposed development are provided below and have been included within the energy and carbon modelling.

7.1.1 HEATING AND HOT WATER

The space heating requirement of the proposed development will be significantly reduced by the proposed fabric, air tightness and ventilation measures.

It is proposed that all houses will have their heating and hot water being met by highly efficient individual air source heat pumps.

As heat pump technology is considered a low and zero carbon technology, it can only be allowed for at the 'Be Green' stage of this energy hierarchy. Therefore, for the purpose of reporting the 'Be Lean' figures, gas combination boilers have been assumed.

7.1.2 VENTILATION

To further minimise heat loss through the building envelope, air leakage will be made a priority. The airtightness of all dwellings will be set to a level of $4.00m^3/h/m^2$ and will utilise continuously running decentralised extract fans (system 3) to ensure the airtightness of the dwellings can be kept low, without compromising on the necessity for good ventilation. A more detailed ventilation strategy will be developed during detailed design with the aim to specify the most appropriate ventilation systems and achieve a pleasant indoor environment.

7.1.3 COOLING

At this stage, it is considered that cooling requirements during the hot summer months will be met via openable windows/doors and continuous running mechanical ventilation (as detailed above).

7.1.4 LIGHTING

The proposed windows aim to maximise daylight to minimise the need for artificial lighting. The electricity consumption associated with lighting will be further reduced by effectively controlling the lighting systems by:

- Using energy efficient lamps and luminaires. Low energy lamps and LED's are proposed throughout.
- Having appropriately commissioned lighting systems.

7.1.5 ENERGY METERING AND MONITORING

Electric sub-metering will be installed in line with CIBSE TM39 to monitor and target energy use within the development. Each individual house will have their own meter and it is likely that energy suppliers may insist on smart metering throughout.



7.4 RESIDENTIAL FABRIC ENERGY EFFICIENCY (FEE)

The Target Fabric Energy Efficiency rate is the minimum energy performance requirement, as stipulated by Building Regulations Part L1 2021, for all new I dwellings. It is expressed as the amount of energy demand in units of kilowatt-hours per square metre of floor area per year. This performance metric is influenced by the fabric only, which is why it can be reported at this stage of the energy hierarchy.

The energy strategy has reduced energy demand through fabric and energy efficiency measures. The demand has been shown to have been reduced by an average of 5%, as detailed in the table below.

Table 6: Residential FEE Performance

Element	Target Fabric Energy Efficiency (TFEE) kWh/m²/year	Dwelling Fabric Energy Efficiency (DFEE) kWh/m²/year	Improvement (%)
Residential Total	39.30	37.61	4%

7.5 TOTAL CO₂ SAVINGS: BE LEAN

The total 'Be Lean' CO_2 emissions, for the development, are summarised below and compared against the baseline figure.

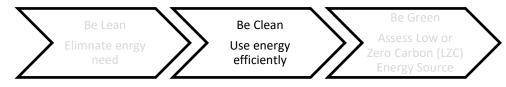
Table 7: Total 'Be Lean' CO₂ emissions.

Stage of Energy Hierarchy	Regulated CO ₂ Emissions (tonnes/year)
Total Baseline	12.26
Total After 'Be Lean'	12.11
Total After 'Be Green'	4.01
Total Saving	8.25
Total Improvement	67%

It should be noted that the above 'Be Lean' figures have been adjusted to account for the PV that is included within the notional building (Part L 2021) when calculating the TER for the baseline. PV is considered a renewable energy source, so it would not be a fair assessment of the actual 'Be Lean' savings if these were to be compared against a baseline which has the benefit of PV. A carbon reporting spreadsheet has been used to calculate the estimated carbon savings of the PV within the baseline. The same amount of carbon savings has then been deducted from the 'Be Lean' figure reported above. This then enables a like for like comparison of the baseline and 'Be Lean' figures.



8. SUPPLY ENERGY EFFICIENTLY (BE CLEAN)



Combined Heat and Power (CHP)

Decentralised energy refers to energy that is generated off the main grid. This may include micro-renewables, heating and cooling. It can also refer to energy from waste plants, combined heat and power, district heating and cooling, as well as geothermal, biomass or solar energy. Decentralised Energy schemes can serve a single building or a whole community, even being built out across entire cities.

The heat source for the communal heating system should be selected in accordance with the following heating hierarchy:

- 1. Connect to local or existing planned heat networks
 - a. Use zero-emission or local secondary heat sources (in conjunction with heat pump, if required)
 - b. Use low-emission combined heat and power (CHP) (only where there is a case for CHP to enable the delivery of an area-wide heat network)
 - c. Use ultra-low NOx gas boilers
- 2. CHP and ultra-low NOx gas boiler communal or district heating systems should be designed to ensure that they meet the relevant planning policy requirements.
- 3. Where a heat network is planned but not yet in existence the development should be designed for connection at a later date.

There are many benefits of decentralised heat generation and Combined Heat and Power (CHP) in terms of cost and CO_2 emissions savings. However, technology such as this is more suitable for sufficiently large heat intensive developments of at least 50 dwellings per hectare and/or at least 300 dwellings, ideally complimented with some non-residential use of significant demand of heat and electricity as stated by Guilford Borough Council Local

Plan. The proposed development size of 9no.dwellings is at the lower end of what the industry tends to view as viable for such systems. The development is for residential only and this will result in 'peaky' thermal demands with little anchor load to enable efficient operation of gas fired CHP. This option also risks the potential to increase costs to residents.

The site is neither sufficiently dense nor large enough to warrant investment from 3rd party managing agents or Energy Supply Companies (ESCos). The proposed development would need to be run by an independent agent/company and there would be very little if any interest among existing ESCos in servicing such a small-scale system. Even if it was possible, the cost of managing fuel procurement, customer billing, operation and maintenance would lead to disproportionally and unnecessary high service charges to residents compared to the provision of heat from individual heating sources.

Based on the anticipated timescale of the proposed development and the predicted trajectory of the national electricity grid decarbonisation, the development of a district heat network powered by fossil fuels is also not considered to be the most carbon efficient approach.

The incorporation of a gas fired combined heat and power (CHP) network will lock the development into relatively carbon intensive gas-fired heating and hot water technology and will not facilitate the transition to less carbon intensive solutions.



9. RENEWABLES OR LZC TECHNOLOGY (BE GREEN)



The following low and zero carbon technologies have been considered for this scheme:

- Air Source Heat Pump (ASHP)
- Domestic Hot Water Heat Pumps
- Photovoltaic Panels (PV)
- Ground Source Heat Pump (GSHP)
- Wind Turbines
- Biomass Boiler
- Solar Thermal

The assessment has shown that Air Source Heat Pumps are considered to be the most suitable renewable/low carbon energy solution for this development.

All other renewable energy technology options are summarised in the appendices and have been deemed as not appropriate for this development.

9.1 AIR SOURCE HEAT PUMPS (ASHP)

Air at any temperature above absolute zero contains some energy. An air source heat pump transfers some of this energy as heat from one place to another, for example, between the outside and inside of a building. This can provide space heating and hot water. A system can be designed to transfer heat in either direction, to heat or cool the interior of the building in winter and summer respectively. For simplicity, the description below focuses on use for interior heating.

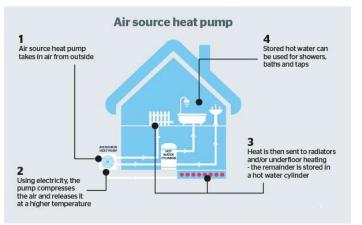
The technology is similar to a refrigerator/freezer or air conditioning unit. The different effect is due to the physical location of the different system components. Just as the pipes on the back of a refrigerator become warm as the interior cools, so an ASHP warms the inside of a building whilst cooling the outside air.

The main components of an ASHP are:

- An outdoor heat exchanger coil, which extracts heat from ambient air.
- An indoor heat exchanger coil, which transfers the heat into hot air ducts, an indoor heating system such as water-filled radiators or underfloor circuits and a domestic hot water tank.

The figure below demonstrates the typical operation of an ASHP system used to supply space heating and hot water to a property.

Figure 2: Example diagram of ASHP System





Some of the key advantages of ASHPs are listed below:

- ASHPs save carbon emissions. Unlike burning oil, gas, LPG or biomass, a heat pump produces no carbon emissions on-site (and no carbon emissions at all, if a renewable energy source is used to power them).
- They save space. There are no fuel storage requirements.
- They require less maintenance than combustion-based heating systems.
- Heat pumps can provide cooling in summer, as well as heating in winter.
- There is no combustion involved and no direct emission of harmful gases.

The use of individual Air Source Heat Pumps (ASHP) is proposed for this development to efficiently supply the houses with space heating and hot water. The ASHP are to be discreetly located within the boundary of each plot.

ASHPs will require electricity to operate, however this electricity can be supplied by renewable sources. This will future proof the home against the decarbonisation of the electricity grid.

A datasheet for the ASHP specified within the SAP calculations for the purpose of this report, has been included within the appendices. The full design of this system will be further developed during the detailed design stage.

9.2 BUILDING SERVICES ENERGY EFFICIENCY MEASURES

The building services and systems to be employed within the dwellings are summarised in the following table.

Table 8: Summary of Building Services

Building Service Element	Specification
Space Heating & Hot Water for The Houses:	Vaillant; aroTHERM plus ASHP (dependent on size)
Heating Hot Water Controls	Time and Temperature Zone Control
Cylinder in Houses: Heat Loss:	Vaillant uniSTOR 250-300 (dependent on size) 1.4-1.6kWh/24 Hr
Ventilation:	System 3 fans Decentralised MEV – Greenwood Unity CV2.1
Flue Gas Heat Recovery:	None
Waste Water Heat Recovery:	None
Showers:	Flow rate = 8 litres per minute



10. TOTAL CO₂ SAVINGS: BE GREEN

The total 'Be Green' CO_2 emissions, for the development are summarised below and compared against the previous stages of the energy hierarchy.

Table 9: Total 'Be Green' CO₂ emissions.

Stage of Energy Hierarchy	Regulated CO ₂ Emissions (tonnes/year)
Total Baseline	12.26
Total After 'Be Lean'	12.11
Total After 'Be Green'	4.01
Total Saving	8.25
Total Improvement	67%



11. SUSTAINABLE DESIGN AND CONSTRUCTION: MATERIALS AND WASTE

The selection of materials is determined by a number of factors, such as architectural context, design rationale, carbon embodiment and maintenance requirements. The proposed development will concentrate on sustainable design, with selected materials in line with local vernacular and landscape character.

The BRE Green Guide to Specification is a simple guide for design professionals. The guide provides environmental impact, cost, and replacement interval information for a wide range of commonly used building specifications over a notional 60-year building life. The construction specification will prioritise materials within ratings A+, A or B.

Preference will be given to the use of local materials & suppliers where viable to reduce the transport distances and to support the local economy.

Wherever feasible, there will be a commitment to using materials that are also from renewable sources and recycled e.g. secondary aggregates. The use of recycled materials (e.g. crushed concrete from waste used for hard-standing or recycled fibreglass insulation) has zero embodied energy impact, other than that expended in their processing or transport.

Timber would be sourced, where practical, certified by FSC, PEFC or an equivalent approved certification body and all site timber used within the construction process would be recycled.

All insulation materials will have a zero-ozone depleting potential.

A Site Waste Management Plan (SWMP), dated December 2023, has been created for Parker Collins House to help to manage construction waste effectively.

The Developer is committed to implementing the SWMP, making it effective, accurate and economical and ensuring that the procedures being put into place are working and maintained.

The Site Manager is the SWMP co-ordinator of the project and as such is responsible for ensuring the instruction of workers, implementation and overseeing of the SWMP. The Site Manager will monitor the effectiveness and accuracy during the routine site visits.

Independent audits will also be completed by the safety consultancy via site inspections. Copies of these reports will be forwarded to the Construction Manager for monitoring.

The Site Manager will provide on-site briefing via induction of appropriate separation, handling, recycling, re-use and return methods to be used by all parties and at appropriate stages of the Project where applicable. Toolbox talks will be carried out regularly on waste issues and all subcontractors will be expected to attend. This will ensure that everyone feels they are included and that their participation is meaningful.



Ways of Minimising Waste.

At Parker Collins House the SWMP identifies ways to minimise the waste produced at early stages, thereby reducing the amount of waste to be removed from the project. Trade Contractors, Design Team and Suppliers are all being encouraged to look at ways to minimise the amount of waste produced.

All the actions listed on the table below will help to reduce the amount of waste and surplus materials, which traditionally would be skipped and sent to landfill.

Table 10: Site Wate Management Plan (SWMP)

5	Site Waste Managen	nent Plan (SWM	P)
Current Actions Table			
ACTION	RESPONSE	ACTION DATE	HOW NOTIFIED
Cutting of plasterboard sheets to be kept to a minimum.	On site		Construction Phase Health & Safety Plan
Wash down point to be located at site entrance	Principle Contractor		Construction Phase Health & Safety Plan
Substructure concrete waste to be utilised as fill and blinding	Site Manager		Construction Phase Health & Safety Plan
Material pallets to be stored for re-use then sent back when economic	Site Manager		Construction Phase Health & Safety Plan
All other materials to be risk assessed	Operatives Site Manager Trade Contractors		Method Statements Risk Assessments Construction Phase Health & Safety Plan
Re use of excavated soil on site	Site Manager		Construction Phase Health & Safety Plan

Segregation

Watse will be segregated on the site. The SWMP Plan has allowed for waste segregation area on site to be allocated for skips for Mixed Waste and Plasterboard collection. Materials at point of use etc., timber to be sorted for re-use.

The labelling systems shall be the Waste Awareness Colour Coding Scheme. If the skips are clearly identified the bulk of the workforce will deposit the correct materials into the correct skip. Skips for segregation of waste identified currently are:

- Wood
- Metal
- Brick/rubble
- Canteen waste

As works progress and other trades come to site other skips will be placed to enable certain waste to be removed from site. This is likely to include:

- Plasterboard
- Paper and cardboard (bagged up)

Management

Waste materials fall into three categories for management, these are:

- Re-use
- Recycle
- Landfill

Re-used

If surplus materials can be used in the permanent works they are classified as materials, which have been re-used. If they are surplus to requirements and need to be removed from site and they can be removed and used in their present form, they can be removed from site for re-use.

Recycling

If the surplus material cannot be re-used in its present form but could be used in a different form, it is sent for recycling such as 50 x 50 timber to make chipboard.



Landfill

If either of the above cannot be satisfied, then the only option left is to send the surplus materials to *landfill*. Landfill is always a last resort.



12. WATER SAVING MEASURES

Household water reduction measures will include the following where applicable:

- Water efficient taps.
- Water efficient cisterns.
- Low output showers.
- Flow restrictors to manage water pressures to achieve optimum levels.
- Water meters to all premises with guidance on water consumption and savings.

The following specification or similar will be adopted on the development to ensure that the water efficiency of the dwelling will achieve a maximum internal consumption of 110 litres per person per day, in line with the requirements of Waverley Borough Council's Policy CC2 of their Local Plan (adopted February 2018).

Table 11: Specification of flow rates and volumes for water using appliances

Water using Appliance	Comment	
WC Cisterns	Dual Flush to be limited to maximum of 6/3	
Baths	Capacity no greater than 190 litres	
Basin taps	Flow rates to be no greater than 3 litres/minute at 3 bar	
Kitchen taps	Flow rates to be no greater than 6 litres/minute at 3 bar	
Shower	Flow rates to be no greater than 8 litres/minute	
Water softener	Not to be installed	
Washing Machine	Water usage to be limited to 8.17 Litres per KG	
Dishwasher	Water Usage to be limited to 1.25 litres per place setting	

Table	12:	Water	Calculations	

Water Calculations					
Installation Type	Unit	Capacity/	Use Factor	Fixed use	Total Use
		Flow Rate		(l/p/day)	(l/p/day)
WC Single Flush	Volume (l)	0.00	4.42	0.00	0.00
WC Dual Flush	Full Flush (l)	6.00	1.46	0.00	8.76
	Pt Flush (l)	3.00	2.96	0.00	8.88
WC's (Multiple)	Volume (l)	0.00	4.42	0.00	0.00
Taps Exc. Kitchen	Flow Rate (I/min)	3.00	1.58	1.58	6.32
Bath (shower present)	(l/min)	190.00	0.11	0.00	20.90
Shower (bath present)	(l/min)	8.00	4.37	0.00	34.96
Bath Only	(I)	0.00	0.50	0.00	0.00
Shower Only	(l/min)	0.00	5.60	0.00	0.00
Kitchen Taps	(l/min)	6.00	0.44	10.36	13.00
Washing Machines	(I/kg dry)	8.17	2.10	0.00	17.16
Dishwashers	(l/place)	1.25	3.60	0.00	4.50
Waste Disposal	(l/min)	0.00	3.08	0.00	0.00
Water Softener	(l/min)	0.00	1.00	0.00	0.00
Total Calculated Water Use (I/p/day)		•			114.5
Grey/Rain Water Reused (I)					0.00
Normalisation Factor	(Factor)				0.91
Total Internal Consumpt	ion (l/p/day)				104.20
External Water Use Allow	vance (I)				5.00
Total Consumption Part	G (l/p/day)	1			109.2



13. FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY

The Flood Risk Assessment (Ref:231743/FRA/OR/RS/01) undertaken by LANMOR Consulting Consultants October 2023 confirms that the area of the site proposed for housing development is located within Flood Zone 1. Flood Zone 1 is defined as areas with a 'low' probability of inundation defined as having a less than 1 in 1,000 annual probability of river (fluvial) or sea (tidal) flooding (<0.1%).

The Flood Risk Assessment has looked at the implications of flooding and the impact the proposed development will have on the flood plain in accordance with the government's guidance document: The National Planning Policy Framework (NPPF), with specific reference to its Planning Practice Guidance.

The EA Flood Mapping shows the site is within Flood Zones 2 and 3. The mapping shows the extent of flood zone 3 is confined to the corridor of the watercourse with the majority of the site falling within Flood Zone 2. When climate change allowances have been factored into the flood model the proposed properties will still be free from flooding with a probability of 1.0% + CC.

This assessment has demonstrated that the proposed development will not restrict the free flow of flood waters or result in the loss of flood storage. The proposed buildings will be free of flooding and a safe access can be provided to and from the site during flood conditions.

The drainage strategy for the site will restrict the runoff from the site to as near greenfield as practical, the runoff will be attenuated in the permeable paving on site ensuring there is no risk of flooding to the proposed development or neighbouring area.

This FRA has demonstrated that the proposals will not have any impact on the current flooding in the area and that a suitable drainage strategy can be provided without increasing the risk of flooding, and we therefore see no reason what these proposals should be refused on the grounds of flooding or drainage.



14. ECOLOGY

An Ecological Assessment (Ref:233336/ARB) has been produced by AA Environmental Limited (AAe) dated December 2023 to support the planning application.

The Ecological Assessment confirms that the majority of the established trees and boundary vegetation will be retained and protected during the works. An ecological buffer zone will be provided alongside the stream to be sensitively designed and managed for the benefit of wildlife.

The Ecological Assessment concludes that are no habitats of international, national, county, or local importance that would be directly affected by the proposals. The site is of overall low ecological value, with the species recorded. described as common or abundant and are found in similar places across much of Britain, with no evidence of protected species recorded.

The findings of this ecological appraisal would indicate that there are no ecological constraints to the redevelopment proposals to preclude planning permission being granted. A range of generic mitigation/enhancement measures have been suggested and, if implemented effectively, would reduce the impact of the works on local wildlife, avoid contravention of current legislation **and** increase the nature conservation value of the site in the long term in accordance with Government guidance as set out in National Planning Policy Framework (NPPF) 2023.

Although no evidence of bats was recorded and no further surveys are considered necessary, it is recommended as a precaution that the areas of restricted tile hanging on the property should be soft stripped under the supervision of a licensed bat worker, with the following controls implemented:

- All site operatives should be given a toolbox talk on the possibility of encountering bats an the legal protection they and their roosts are afforded
- Initial works will be carried out with great care, with the areas of tile hanging removed by hand, lifting each tile clear with two hands rather than lifting the front and rolling the tile backwards which may crush any bats beneath.
- Tiles will also be checked underneath before being stacked or discarded as bats sometimes cling to the underside of tiles.

Although none of the established trees are scheduled to be felled to facilitate the works, in event that any trees need to be removed then a further assessment will be required to determine presence or likely absence of bats. The findings of which will determine any restrictions and control measures to be adopted to comply with current legislation protecting bats and their roosts.

Although, the pond was assessed to be of poor suitability to support great crested newts and therefore no follow-up surveys are recommended, care should be taken during works, with all site operatives made aware of the legislation protecting great crested newts. In the unlikely event of encountering any great crested newts then works should stop immediately and Natural England or AAe contacted so that appropriate advice can be provided.

To protect any vegetation to be retained, suitable fencing may be required at certain locations to reduce the possibility of any damage that could be caused during the works. To minimise accidental damage, any overhanging branches should be pruned back to suitable live growth points. All works should be undertaken by a suitably qualified and experienced specialist contractor and should conform to current industry best practice, i.e. BS 3998: 2010 'Tree Work

- Recommendations'. The retention of these features will maintain existing commuting/foraging routes currently utilised by local wildlife.

As part of the proposals, soft landscaping will be carried out. Where any new planting is proposed, it should aim to use native species, but where this is not practicable then species of known value for wildlife can be used. In particular, flowering plants will be of benefit to invertebrate species and shrubs and trees may provide nesting opportunities for birds once they become established.

Any new boundary treatment should be designed to promote permeability of the site to minimise fragmentation and allow free movement of wildlife throughout the site, for example by strengthening/enhancing the existing boundary vegetation, planting up a series of new hedgerows and/or installing post and rail fences. If close boarded fences are required for security reasons these should be minimised and raised slightly off the ground (c. 150-200 mm) to allow animals to pass underneath.



The ecological buffer alongside the stream will be sensitively designed with existing vegetation supplemented with native species of local provenance only with the species mix agreed by the appointed landscape contractor. An Advisory Note for planting near watercourses is attached at Appendix E. Once established, this buffer zone will provide an important resource for a variety of wildlife, as well as protecting the river in the long-term.

The site could be further enhanced by providing roosting, nesting, and sheltering opportunities for a range of species and the creation of new wildlife habitats, such as some of those recommended by the Chartered Institute of Ecology Environment and Management's published Biodiversity Net Gain Good Practice Guidance, and listed below:

- Nest boxes
- Bug hotels
- Bat boxes
- Hedgehog houses
- Pollinator nest sites
- Planting wildflowers

The effects of lighting on plants and animals are difficult to assess, but it is thought that lighting can adversely affect invertebrates, birds, and bats. Although the site is currently well-lit by onsite sources and neighbouring developments, in accordance with best practice, a sensitive lighting scheme will be designed to minimise light spillage and pollution and not directed onto any wildlife boxes installed or onto the boundary vegetation



15. CONCLUSIONS

The energy strategy detailed has followed the accepted Energy Hierarchy of 'Be Lean', 'Be Clean' and 'Be Green'. The energy strategy proposed for the development can be summarised as below.

Table 13: Summary of Proposed Energy Strategy

Element	Strategy
Passive	Optimised design to enable controlled solar gain and improved direct and indirect natural lighting
Fabric	Building fabric U values have been enhanced over and above those detailed with Part L1 2021
Heating	Vaillant aroTHERM plus Air Source Heat Pump
Hot Water	Vaillant aroTHERM plus Air Source Heat Pumps & UniSTOR HWC
Cooling	None
Ventilation	Mechanical extract ventilation system 3 Low design air permeability (DAP)
Lighting	Energy efficient LED Lighting where applicable

$15.1 \ \text{Total} \ \text{CO}_2 \ \text{Savings}$

A summary of the overall reduction in CO_2 emissions after each stage of the energy hierarchy is summarised in the table below.

Table 14: Energy Strategy Carbon Emissions Summary

Stage of Energy Hierarchy	Regulated CO ₂ Emissions (tonnes/year)
Total Baseline	12.26
Total After 'Be Lean'	12.11
Total After 'Be Green'	4.01
Total Saving	8.25
Total Improvement	67%

The CO_2 emissions savings detailed above demonstrate that by following the measures outlined within this energy strategy, a 67% reduction will be achieved compared to the Building Regulations Part L 2021 baseline.

Finally, the fabric specification detailed within this energy strategy ensures that the average Dwelling Fabric Energy Efficiency improves upon the average Target Fabric Energy Efficiency (as defined by Building Regulations Part L1 2021) by 4%. This is detailed within the table below.

Table 15: Residential FEE Performance

Element	Target Fabric Energy Efficiency (TFEE) kWh/m²/year	Dwelling Fabric Energy Efficiency (DFEE) kWh/m²/year	Improvement (%)
Residential Total	39.30	37.61	4%



Energy and Sustainability Summary

The strategy achieves and meets the following requirements:

- Maximises the energy efficiency performance of the building fabric, in accordance with the energy hierarchy.
- The fabric energy efficiency (DFEE) achieves a 4% reduction over the minimum standards defined by Building Regulations Part L1 2021 (TFEE).
- Minimises carbon dioxide emissions further at the 'Be Green' stage of the energy hierarchy by utilising heat pump technology in the form of efficient individual ASHP to meet both space heating and hot water of the houses.
- Reduces a total estimated 8.25 tonnes of CO2 compared to the Part L 2021 baseline. This equates to a 67% saving. This is in line with the requirements of Guildford Borough Council's Policy D16-Criteria (4).
- In keeping with the requirements of Guildford Borough Council's Policy D2-Criteria 1d of their Local Plan (adopted April 2019), this strategy details a specification of water efficiency measures which meets the highest national standard.
- The proposals detailed herein include sustainable construction techniques and standards in line with National and Guildford Borough Council's planning policy requirements.
- Complies with all of the main compliance criteria required by Part L 2021 of the Building Regulations.



16. Appendices

The following pages detail:

- Appendix A: Alternative Renewable Energy Options
- Appendix B: Vaillant aroTHERM plus Technical Datasheet
- Appendix C: SAP Output Sheets



16.1 APPENDIX A: ALTERNATIVE RENEWABLE ENERGY OPTIONS

The following alternative options to supply low carbon and renewable energy generation have been explored and discounted based on the following reasons:

Wind Turbines

Wind turbines come in a variety of sizes and shapes. Turbines of 1 kW can be installed to single house and large-scale turbines of 1-2 MW can be installed on a development to generate electricity to multiple dwellings and other buildings. In both instances the electricity generated can be used on site or exported to the grid. Vertical- or horizontal-axis turbines are available.

A roof-mounted 1 kW micro wind system costs up to £3,000. A 2.5 kW pole-mounted system costs between £9,900 and £19,000. A 6 kW pole-mounted system costs between £21,000 and £30,000 (taken from the Energy Saving Trust, TBC by supplier)

- Local average wind speed is a determining factor. A minimum average wind speed of 6 m/s is required.
- Noise considerations can be an issue dependent on density and build-up of the surrounding area.
- Buildings in the immediate area can disrupt wind speed and reduce performance of the system.
- Planning permission will be required along with suitable space to site the turbine, whether ground installed or roof mounted.

Wind turbines have been discounted due to concerns over reliable wind resources. The use of wind turbines is likely to present aesthetic as well as nuisance issues.

Biomass Boilers

Providing a heating system fuelled by plant-based materials such as wood, crops or food waste. Biomass boilers generate heat for space heating and domestic hot water through the combustion of biofuels, such as woodchip, wood pellets or potentially biofuel or bio diesel. Biomass is considered to be virtually zero carbon. They can be used on an individual scale or for multiple dwellings as part of a district-heating network. A back-up heat source should be provided as consistent delivery of fuel is necessary for continued operation.

Biomass is not considered a technically viable option for this development scheme due to the following constraints; as

- No space has been allowed for fuel storage within the development.
- The capital installation cost would also be high which leads us to the conclusion that biomass would be neither be a technically feasible nor a commercially viable option for this development scheme.



Ground Source Heat Pumps (GSHP)

Ground Source Heat Pumps (GSHPs) operate on the same principle as an Air Source Heat Pump (ASHP) in that they extract heat from a source (in this instance the ground) and compress this energy to increase temperature for space heating and hot water. Pipework is installed into the ground, either through coils or in bore holes and piles, circulating a mix of water and antifreeze to extract energy from the ground, where the year-round temperature is relatively consistent (approx. 10° C at 4 metres depth). This leads to a reliable source of heat for the building.

Again, an electrically powered pump circulates the liquid and powers the compressor, however annual efficiencies for GSHPs tend to be higher than those of ASHPs.

Discounted on the grounds of costs and available space.

Solar Thermal

Solar Thermal generates domestic hot water from the sun's radiation. Glycol circulates within either flat plate or evacuated tube panels, absorbing heat from the sun, and transferring this energy to a water cylinder. A well designed solar thermal system will account for 50-60% of a dwelling's annual hot water demand. Sizing the system to meet a higher demand will lead to excess heat generation in the summer months and overheating of the system.

Unsuitable for blocks of flats and low carbon reduction efficiency compared to photovoltaic systems. Solar hot water systems for flatted blocks are only suitable where a central boiler plant room is provided to accommodate a central thermal store.

Solar Photovoltaics (PV)

Solar energy could be a solution to reduce CO₂ emissions to satisfy building regulations, however, the efficient building fabric and use of air source heat pumps ensures compliance is met without the need for PV.



16.2 APPENDIX B: VAILLANT AROTHERM PLUS TECHNICAL DATASHEET

Figure 3: Vaillant aroTHERM plus Technical Datasheet



Technical specifications

aroTHERM plus	Unit	3.5kW VWL 35 / 6	5kW VWL 55 / 6	7kW VWL 75 / 6	10kW VWL 105 / 6	12kW VWL 125 / 6	
General							
Width	mm	1,100		1,100			
Height	mm	765		965	5 1,565		
Depth	mm			450			
Weight, ready for operation	kg	11	4	128	194		
Connection, heating circuit				G 1 1/4"			
Rated voltage	V		230 V (+1	0%/- 15%), 50 H	Iz, 1~/N/PE		
Rated current, maximum	A	14	.3	15.0	23	3.3	
Fuse size			16		2	5	
Fuse type	A			C/D			
RCD type				A			
eBUS (2-core communication cable)	mm2	0.75					
Maximum length eBUS cable (communication cable)	m	50					
IP rating				IP 15 B			
Fan, power consumption	W		40		50		
Fan quantity			1		2		
Fan, air flow , maximum	m³ /h	2,300		5,100			
Heating pump, power consumption	W	2 - 50		3 -	87		
Heating circuit							
Heating water temperature, minimum/maximum	°C			20 - 75			
Basic length of the heating water pipe, maximum, between the outdoor unit and indoor unit	m	20					
Operating pressure, minimum	bar	0.50					
Operating pressure, maximum	bar	3.00					
Volume flow, minimum	l/h	40	00	540	9	95	
Volume flow, maximum	l/h	80	50	1,205	2,0	065	
Water volume, in the outdoor unit	I.	1.	5	2.0	2	.5	
Water volume, in the heating circuit, minimum, thawing mode, activated/deactivated back-up heater	I	15 / 40		20 / 55	45	/ 150	
Remaining feed pressure, hydraulic	kPa (mbar)		5.0 0.0)	44.0 (440.0)		5.0 0.0)	



Compatible with





sensoCOMFORT



VRC 700

SCOP and heating output

	RM output	35°	C flow	40°	C flow	45°	C flow	50°	C flow	55°	C flow
arothe	RM output	Output	SCOP								
	-5°C	4.2		4.1		4		3.9		3.8	
3.5kW	-3°C	4.6	4 41	4.4	4.03	4.3	3.65	4.2	3.37	4	3.10
S. SKW	0°C	4.7	4.41	4.7	4.05	4.6	3.05	4.5	5.51	4.4	3.10
	2°C	4.9		4.9		4.9		4.7		4.6	
	-5°C	6.3		6		5.6		5.5		5.4	
5kW	-3°C	6.8	1.10	6.4	4.13	6.1	3.77	5.9	3.41	5.8	3.06
DKW	0°C	6.9	4.40	6.7	4.15	6.6	5.11	6.4	3.41	6.2	3.00
	2°C	7.1		7		6.9		6.7		6.5	
	-5°C	8.2		8.1		8		7.5		7	
7kW	-3°C	8.8	1.76	8.6	412	8.4	3.91	7.9	3.65	7.4	2.20
7 KVV	0°C	9.5	4.30	9.3	4.13	9.1	8.6	8.6	3.65	8.1	3.39
	2°C	10		9.8		9.6		9		8.5	
	-5°C	9.9		9.7		9.4		9.1		8.8	
	-3°C	10.7		10.3	1	10	4.13	9.6	3.85	9.2	3.58
10kW	0°C	11.9	5.03	11.6	4.58	11.3		10,7		10.2	
	2°C	12.8	1	12.5	1	12.1	1	11.5	1	10.9	1
	-5°C	13.1		12.8		12.5		11.7		10.8	
12144	-3°C	13.9	100	13.4		12.9	4.71	12.1	3.92	11.2	3.63
12kW	0°C	15.2	4.88	14.6	4.55	14.1	4.21	13.2		12.3	
	2°C	16		15.5		14.9]	13.9		13	

aroTHERM plus	Unit	3.5kW VWL 35 / 6	5kW VWL 55 / 6	7kW VWL 75 / 6	10kW VWL 105 / 6	12kW VWL 125 / 6
Refrigerant circuit						
Fluid type		R290				
Fluid fill quantity	kg	0	0.6 0.9 1.3		.3	
Refrigerant, Global Warming Potential (GWP)		3				
CO ₂ equivalent	t	0.0018		0.0027	0.0039	
Permissable operating pressure	bar	31.5				
Compressor type		Rotary piston Scroll compressor				mpressor
Compressor oil type		Specific polyalkylene glycol (PAG				
Compressor, control		Electronic				

Noise emissions, heating mode						
Sound power, EN 12102, EN 14511 LWA, A7/W35	dB(A)	51	53	58		
Sound power, EN 12102, EN 14511 LWA, A7/W45	dB(A)	53		58		
Sound power, EN 12102, EN 14511 LWA, A7/W55	dB(A)	54 55		60		

Efficiency					
Energy efficiency class 35°C	(A+++ to F)	A+++			
Energy efficiency class 55°C	(A+++ to F)	A++			
Combination with uniTOWER					
Energy efficiency class	(A+++	A++			

Energy environcy class	to F)	
Energy efficiency class for hot water supply	(A+ to F)	A



Energy Statement

Parker Collins House, Ripley

16.3 APPENDIX C: SAP OUTPUT SHEETS



Property Reference	Plot	t 1							Issue	d on Date	15/12	/2023
Assessment Reference	Plot	t 1				Pro	р Туре	Ref	Plot 1			
Property	Par	ker Collins	House, P	ot 1, Parker Collins Ho	use, Ripl	ey, Surre	y, GU2	3 6JA				
SAD Doting					DER					TER	40	04
SAP Rating				85 B	% DER		3.22	2		IEK		.21
Environmental				97 A		< IER				TEEE		.46
CO ₂ Emissions (t/year)				0.37	DFEE		36.0)9		TFEE		.10
Compliance Check				See BREL		E < TFE					2.	
% DPER < TPER				37.20	DPER		33.5	50		TPER	53	.35
Assessor Details	Mrs. Ma	nal Bashir								Assessor	D L7	97-0001
Client												
SUMMARY FOR INPL	JT DATA F	OR: New	Build (As Designed)								
Drientation				East								
Property Tenture				1								
Fransaction Type				6								
Ferrain Type				Suburban								
.0 Property Type				House, Semi-Detach	ed							
Which Floor				0								
2.0 Number of Storeys				3								
-												
3.0 Date Built				2024								
3.0 Property Age Band												
I.0 Sheltered Sides				1								
5.0 Sunlight/Shade				Average or unknown								
6.0 Thermal Mass Parame	eter			Precise calculation					่	1/ 21/		
Thermal Mass				N/A					K	J/m²K		
7.0 Electricity Tariff				Standard								
Smart electricity meter	fitted			Yes								
Smart gas meter fitted				Yes								
7.0 Measurements												
				Basemer		Loss P 0.00 r		r In	ternal Flo 0.00 r			Storey Heig 0.00 m
				Ground floo 1st Store	or:	19.00 19.52	m		47.62 47.62	m²		2.39 m 2.67 m
				2nd Store	ý:	19.22	m		32.63	m²		2.38 m
				3rd Store 4th Store	ý:	0.00 r 0.00 r	n		n 00.0 n 00.0	n²		0.00 m 0.00 m
				5th Store 6th Store		0.00 r 0.00 r			n 00.0 n 00.0			0.00 m 0.00 m
				7th Store	y:	0.00 r	n		1 00.0	n²		0.00 m
3.0 Living Area				19.62					n	1 ²		
9.0 External Walls												
Description	Туре	Constru	uction		U-Value (W/m²K)	Kappa (kJ/m²K)		Nett Area) (m²)	Shelter Res	Shelter	Opening	s Area Calculati Type
External Brick/Block Wall	Cavity Wall	lightwei	ght aggregat	oard on dabs or battens, e block, filled cavity, any	0.19	110.00	113.27	94.59	0.00	None	18.68	Enter Gross Ar
Timber Stud Wall Dormer/Cheek Walll	Timber Frame Timber Frame	Timber		one layer of plasterboard) one layer of plasterboard)	0.19 0.19	9.00 9.00	18.61 4.77	18.61 0.97	0.50 0.00	Room In Roo None	f 0.00 3.80	Enter Gross Ar Enter Gross Ar
0.1 Party Walls Description	Туре		Construe	ction					Kappa (kJ/m²K)		Shelter Res	Shelter
Party Wall	Filled C Edge S	avity with ealing		asterboard on dabs bo e blocks, cavity or cavi		ghtweigl	nt	0.00	110.00	64.70	0.00	None
0.2 Internal Walls Description			Construct	ion							Kap	opa Area (n
1											(kJ/n 9.0	n²K)
Timber Stud Partition			Jigeterhor	rd on timber frame								



Description	Туре	Construc	tion			Kappa (kJ/m²K)	Gross Area(m²)		a Code	Shelte Factor		ulatior ype	Openings
Main Roof	External Plane	Plasterbo	ard, ir	sulated at ceiling level	0.10	9.00	15.91	(m²) 15.9		0.00	Ente	r Gross	s 0.00
Sloping Roof	Roof External Slope	Plasterbo	ard, ir	nsulated slope	0.13	9.00	13.56	13.5	6 None	0.00		vrea r Gross	s 0.00
Lower Level Roof	Roof External Plane	Plasterboa	ard, ir	nsulated at ceiling level	0.10	9.00	15.00	15.0	0 None	0.00		vrea r Gross	s 0.00
Dormer Roof	Roof External Plane Roof	Plasterbo	ard, ir	nsulated at ceiling level	0.27	9.00	7.14	7.14	1 None	0.00	Ente	vrea r Gross vrea	s 0.00
0.2 Internal Ceilings													
Description Internal Ceiling 1 Internal Ceiling 2	Ĺ	Storey .owest occu ·1	pied	Construction Plasterboard ceiling, ca Plasterboard ceiling, ca								47	a (m²) 7.62 2.63
1.0 Heat Loss Floors	_												
Description	Type	Storey Index		Construction	- 4 - 4		J-Value W/m²K)	S	helter Code		Shelter Factor	(kJ/m ²	
Ground Floor	Ground Floor - Solid	Lowest occup	bied	Suspended concrete floor, carp	eted		0.12		None		0.00	75.00) 47.62
1.2 Internal Floors		Storey	C ~ ~	atmustion							K.		A = 0 0 (m)
Description		Storey Index	Con	struction								appa //m²K)	Area (m ²
Internal Floor Internal Floor 2				terboard ceiling, carpeted terboard ceiling, carpeted								9.00 9.00	47.62 32.63
2.0 Opening Types													
Description	Data Source	Туре		Glazing		Glazi Gap	3		G-value	Frame Type		rame actor	U Value (W/m²K)
Door Windows	Manufacturer BFRC, BSI or	Solid Doo Window	r	Double Low-E Soft	0.1		Air F Air F		0.00 0.43	Wood Wood).70 1.00	1.00 1.20
Bifold Door	CERTASS data BFRC, BSI or			Double Low-E Soft	0.1		Air F	illed	0.43	Wood	1	1.00	1.20
Dormer Windows	CERTASS data Manufacturer			Double Low-E Soft	0 1		Air F	illed	0.63	Wood).70	1.20
Roof Light	Manufacturer	Roof Light	t	Double Low-E Soft			Air F		0.63	Wood).70	1.20
3.0 Openings													
Name Front Elevation Front Elevation Rear Elevation Rear Elevation Side Elevation Rear Elevation	Opening Ty Door Windows Dormer Win Bifold Door Windows Windows Dormer Win	dows		Location External Brick/Block Wall Dormer/Cheek Wall External Brick/Block Wall External Brick/Block Wall External Brick/Block Wall Dormer/Cheek Wall			entation East East West West North West		Area (1.9 4.9 1.9 8.0 2.9 0.7 1.9	3 4 0 9 9 3		((((4	icn)))) 5)
4.0 Conservatory				None					7				
5.0 Draught Proofing				100] %				
6.0 Draught Lobby				No					1				
7.0 Thermal Bridging 7.1 List of Bridges				Calculate Bridges									
Bridge Type E1 Steel lintel with perfor E3 Sill E4 Jamb E5 Ground floor (norma E6 Intermediate floor wi E18 Party wall between E10 Eaves (insulation at E12 Gable (insulation at E13 Gable (insulation at E17 Corner (inverted – i	l) thin a dwelling dwellings t ceiling level) t ceiling level) t rafter level)		Inde Gov Gov Gov Gov Gov Gov Gov	rce Type pendently assessed Approved Scheme Approved Scheme Approved Scheme Approved Scheme Approved Scheme Approved Scheme Approved Scheme Approved Scheme	Length 11.57 6.82 25.82 19.52 38.74 13.20 9.62 7.22 2.79 9.48	Psi 0.02 0.02 0.11 0.00 0.04 0.07 0.10 0.06 -0.0	5 0.0 2 0.0 2 0.0 1 0.1 0 0.0 4 0.0 7 0.0 0 0.1 0 0.1 0 0.1 0 0.1 0 0.1 0 0.1	05 H 02 F 02 F 11 F 00 F 04 F 07 F 10 F 06 F	Reference: Hi Therm RCD RCD RCD RCD RCD RCD RCD RCD RCD RCD				Imported No No No No No No No No No
external area) P1 Party wall - Ground f P2 Party wall - Intermed P4 Party wall - Roof (ins P5 Party wall - Roof (ins R1 Head of roof window R2 Sill of roof window R3 Jamb of roof window R6 Flat ceiling R7 Flat ceiling (inverted R9 Roof to wall (flat ceil E16 Corner (normal) R8 Roof to wall (rafter)	loor liate floor within a sulation at ceiling l sulation at rafter le , ,	dwelling evel)	Gov Tabl Gov Inde Inde Inde Inde Inde Gov	Approved Scheme e K1 - Default Approved Scheme pendently assessed pendently assessed pendently assessed pendently assessed pendently assessed pendently assessed pendently assessed pendently assessed	9.92 15.99 7.22 2.75 3.62 4.20 9.60 15.19 11.19 22.76 5.60	0.11 0.00 0.12 0.12 0.12 0.12 0.12 0.06 0.06 0.06 0.06	1 0.7 0 0.0 5 0.0 5 0.0 2 0.7 2 0.7 2 0.7 5 0.0 6 0.0 6 0.0 6 0.0 5 0.0	11 F 10 F 10 F 12 T 12 T 12 T 12 T 12 T 16 T 16 T 105 F	RCD RCD RCD To be calcu To be calcu To be calcu To be calcu To be calcu To be calcu RCD To be calcu	lated lated lated lated lated			No No No No No No No No No
Y-value				0.05					W/m²K				
8.0 Pressure Testing				Yes									



Decigned AD		4.00			m ³ /(h m ²) @ 50 D-	
Designed AP ₅₀	-0	4.00] m³/(h.m²) @ 50 Pa	
Property Tested		Yes]	
Test Method		Blower Door]	
19.0 Mechanical V						
Mechanical Ve		Vee			1	
	cal Ventilation System Present	Yes]	
	I Installation	No] 1	
	cal Ventilation data Type	Database]	
Туре			act ventilation - decent	ralised]	
	rence Number	500787]	
Duct Type	9	Rigid				
MVHR Ef	ficiency	0.00]	
Wet Roor	ms	4				
SFP from	Installer Commissioning Certificate	No]	
19.1 Mechanical e	extract ventilation - Decentralised					
SFP 0.13	Fan/Room Type Count In Room Fan 1					
	Kitchen In Room Fan Other 4					
0.11	Wet Room					
0.00 0.00	In Duct Fan Kitchen 0 In Duct Fan Other 0					
0.10	Wet Room Through Wall Fan 0					
	Kitchen					
0.10	Through Wall Fan 0 Other Wet Room					
20.0 Fans, Open F	Fireplaces, Flues					
21.0 Fixed Cooling	g System	No]	
22.0 Lighting						
No Fixed Lighti	ing	No]	
		Name Lighting	Efficacy 75.00	Power 10	Capacity 750	Count 35
24.0 Main Heating	1	Database]	
Description		aroTHERM plus	7kW]	
Percentage of	Heat	100.00			%	
Database Ref.	No.	104436]	
Fuel Type		Electricity]	
SAP Code		0			1	
In Winter		262.31			į	
In Summ		278.59			1	
Model Name		aroTHERM plus	7kW + AI]	
Manufacturer		Vaillant Group U]	
System Type		Heat Pump]	
Controls SAP (Code	2207			1	
Delayed Start S		No]	
Delayeu Stall 3	Jiai	NO]	

No

No

0.00

No

None or Unknown

2013 or later

Pump in heated space

Radiators and Underfloor

HETAS approved System

Oil Pump Inside

Fan Assisted Flue

Is MHS Pumped

Heat Emitter

Heating Pump Age

FI Case

Flue Type



Underfloor He	ating			Yes - Pipe	s in thin scre	ed			7		
Flow Tempera	-			Enter valu							
Flow Tempera				45.00							
Boiler Interloc				No					 _		
	· · · · · · · · · · · · · · · · · · ·										
25.0 Main Heatin	g 2			None							
26.0 Heat Networ	ks			None							
	Heat Source	ce Fuel Ty	pe Heating Us	e Effic	iency Perc		Heat		ectrical Fue	el Factor	Efficiency type
Heat source 1 Heat source 2 Heat source 3 Heat source 4 Heat source 5	None None					Heat		Power Ratio			
28.0 Water Heatin	ng										
Water Heating	I			Main Heat	ting 1						
SAP Code				901							
Flue Gas Hea	t Recovery Sys	stem		No							
Waste Water I	leat Recovery	Instantaneou	s System 1	No							
Waste Water I	Heat Recovery	Instantaneou	s System 2	No]		
Waste Water I	Heat Recovery	Storage Syst	em	No					7		
Solar Panel				No					Ī		
Water use <=	125 litres/pers	on/day		Yes					Ī		
Summer Imme	ersion			No					Ī		
Cold Water So	ource			From main	ns				Ī		
Bath Count				1					Ī		
Supplementar	y Immersion			No					i i		
	, ly Heating Hot	Water		No					i i		
28.1 Showers											
Description			Shower Type)			w Rate	Rated Power	Connected (Connected	То
Bathroom 1 Ensuite 1 Ensuite 2			Combi boiler Combi boiler Combi boiler	or unvented	d hot water s	/stem /stem	I/min] 8.00 8.00 8.00 8.00	[kW]	No No No		
28.3 Waste Water	r Heat Recove	rv System					0.00				
		.,.,		11-+>0/-+	Quiling days				 _		
29.0 Hot Water C	ylinder			Hot Water	Cylinder						
Cylinder Stat				Yes							
Cylinder In He	•			Yes							
Independent T				Yes							
Insulation Typ				Measured	Loss						
Cylinder Volur	ne			250.00							
Loss				1.40					kWh/day		
Pipes insulation				,	ated primary	pipework					
In Airing Cupb	oard			No							
31.0 Thermal Sto	re			None							
34.0 Small-scale	Hydro	_	_	None						_	_
Electricity Ger	erated			0.00							
Apportioned				0.00					kWh/Year		
Connected to	dwelling's elec	tricity meter		Yes							
Electricity Ger	eration			Annual							
Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	g Sep	Oct	Nov	Dec



Recommendations Lower cost measures None Further measures to achieve even higher standards None



Property Reference	Plot	2							Issue	d on Date	15/12	/2023
Assessment Reference	Plot	2				Pro	р Туре	Ref	Plot 2			
Property	Park	er Collins	House, P	lot 2, Parker Collins H	ouse, Riple	ey, Surre	y, GU23	3 6JA				
OAD Define					DED					TED		
SAP Rating				85 B	DER		3.20)		TER		.02
Environmental				97 A	% DER	< TER						.06
CO ₂ Emissions (t/year)				0.37	DFEE		35.3	34		TFEE		.22
Compliance Check				See BREL		E < TFE					2.4	
% DPER < TPER				36.35	DPER		33.3	30		TPER	52	32
Assessor Details	Mrs. Mar	nal Bashir								Assessor	ID L7	97-0001
Client												
SUMMARY FOR INPL	JT DATA FO	OR: New	Build (As Designed)								
Drientation				East								
Property Tenture				1								
ransaction Type				6								
Ferrain Type				Suburban								
.0 Property Type				House, Semi-Detac	ned							
Which Floor				0								
2.0 Number of Storeys				3								
3.0 Date Built				2024								
8.0 Property Age Band				L								
I.0 Sheltered Sides				2								
5.0 Sunlight/Shade				Average or unknow	<u>ו</u>							
5.0 Thermal Mass Parame	eter			Precise calculation								
Thermal Mass				N/A					k	J/m²K		
7.0 Electricity Tariff				Standard								
Smart electricity meter	fitted			Yes								
Smart gas meter fitted				Yes								
7.0 Measurements					Heat	Loss Po	erimete	r Inf	ternal Flo	or Area	Average	Storey Heig
				Baseme Ground flo	nt:	0.00 r 19.00	n		0.00 r 47.62	m²	-	0.00 m 2.39 m
				1st Store	y:	19.52	m		47.62	m²		2.67 m
				2nd Store 3rd Store		19.22 0.00 r	n		32.63 0.00 r	m²		2.38 m 0.00 m
				4th Store 5th Store		0.00 r 0.00 r			r 00.0 r 00.0			0.00 m 0.00 m
				6th Store 7th Store		0.00 r 0.00 r			r 00.0 r 00.0			0.00 m 0.00 m
					,							
3.0 Living Area				19.62					n	n²		
9.0 External Walls Description	Туре	Constru	uction		U-Value	Kappa	Gross	Nett Area	Shelter	Shelter	Openina	s Area Calculati
External Brick/Block Wall	Cavity Wall	Cavity v lightwei	vall; plasterb ght aggregat	oard on dabs or battens, e block, filled cavity, any		(kJ/m²K) 110.00			Res 0.00	None	18.68	Type Enter Gross Ar
Timber Stud Wall Dormer/Cheek Walll	Timber Frame Timber Frame	Timber		one layer of plasterboard) one layer of plasterboard)	0.19 0.19	9.00 9.00	18.61 4.77	18.61 0.97	0.50 0.00	Room In Roo None	of 0.00 3.80	Enter Gross Ar Enter Gross Ar
0.1 Party Walls Description	Туре		Constru	ction					Kappa		Shelter	Shelter
Party Wall	Filled Ca Edge Se	avity with aling		asterboard on dabs bo e blocks, cavity or cav		ghtweigł	nt	(W/m²K) 0.00	(kJ/m²K) 110.00	(m²) 64.70	Res 0.00	None
	-	-		-								
0.2 Internal Walls		4	Construct	tion							K	na Aroo /-
.2 Internal Walls Description Timber Stud Partition			Construc	t ion ard on timber frame							Kap (kJ/n 9.0	n²K)



Description	Туре	Construc	tion		U-Value (W/m²K)				ea Code			ulatioi /pe	Openings
Main Roof	External Plane	Plasterboa	ard, ir	sulated at ceiling level	0.10	9.00	15.91	(m 15.9		0.00	Enter	Gros	s 0.00
Sloping Roof	Roof External Slope	Plasterboa	ard, ir	sulated slope	0.13	9.00	13.56	13.	56 None	0.00	Enter		s 0.00
Lower Level Roof	Roof External Plane	Plasterboa	ard, ir	sulated at ceiling level	0.10	9.00	15.00	15.0	00 None	0.00		rea Gros	s 0.00
Dormer Roof	Roof External Plane Roof	Plasterbo	ard, ir	sulated at ceiling level	0.27	9.00	7.14	7.1	4 None	0.00	Enter	rea [·] Gros: rea	s 0.00
0.2 Internal Ceilings													
Description Internal Ceiling 1 Internal Ceiling 2		Storey owest occu 1	pied	Construction Plasterboard ceiling, ca Plasterboard ceiling, ca								4	a (m²) 7.62 2.63
1.0 Heat Loss Floors Description	Туре	Storey Index	¢	Construction			U-Value	5	Shelter Code		Shelter		a Area (m²)
Ground Floor	Ground Floor - Solid	Lowest occup	pied	Suspended concrete floor, carp	eted	(W/m²K) 0.12		None		Factor 0.00	(kJ/m² 75.00	
1.2 Internal Floors													
Description		Storey Index	Con	struction								nppa /m²K)	Area (m ²)
Internal Floor		Index		erboard ceiling, carpeted							` 9	.00 ′	47.62
Internal Floor 2			Plas	erboard ceiling, carpeted	chipboard f	loor					9	.00	32.63
2.0 Opening Types	Data Crame	Tures		Clasics		0 1-1		111.00 01	0	E	-		11.1/-1
Description	Data Source	Туре		Glazing		Glazi Ga		lling ype	G-value	Frame Type		ame ctor	U Value (W/m ² K)
Door Windows	Manufacturer BFRC, BSI or	Solid Doo Window	r	Double Low-E Soft	0.1			Filled Filled	0.00 0.43	Wood Wood		.70 .00	1.00 1.20
Bifold Door	CERTASS data BFRC, BSI or	Window		Double Low-E Soft	0.1		Air	Filled	0.43	Wood	1	.00	1.20
Dormer Windows	CERTASS data Manufacturer	Window		Double Low-E Soft				Filled	0.63	Wood		.70	1.20
Roof Light	Manufacturer	Roof Light	t	Double Low-E Soft	0.1		Air	Filled	0.63	Wood	0	.70	1.20
3.0 Openings Name	Opening Ty	ne		Location		Ori	ientatior	,	Area	(m²)		Pit	ch
Front Elevation	Door	pe		External Brick/Block Wall		01	East	•	1.9	3		()
Front Elevation Front Elevation	Windows Dormer Win	dowo		External Brick/Block Wall Dormer/Cheek Wall			East East		4.9 1.9			(
Rear Elevation	Bifold Door	uows		External Brick/Block Wall			West		8.0			(
Rear Elevation	Windows			External Brick/Block Wall			West		2.9	9		(
Side Elevation Rear Elevation	Windows Dormer Wind	dowo		External Brick/Block Wall Dormer/Cheek Wall			South West		0.7 1.9			4	
	Donner wind	uows					West		1.8	0)
4.0 Conservatory			l	None									
5.0 Draught Proofing			l	100					%				
6.0 Draught Lobby				No									
7.0 Thermal Bridging			[Calculate Bridges									
7.1 List of Bridges													
Bridge Type E1 Steel lintel with perfo	orated steel base n			ce Type pendently assessed	Length 11.57	n Ps 0.0			Reference Hi Therm	:			Imported No
E1 Steel linter with perio	sidica sidei base p	iato		Approved Scheme	6.82	0.0			RCD				No
E4 Jamb			Gov	Approved Scheme	25.82	0.0	2 0	.02	RCD				No
E5 Ground floor (norma E6 Intermediate floor wi				Approved Scheme Approved Scheme	19.52 38.74	0.1			RCD RCD				No
E18 Party wall between				Approved Scheme	13.20	0.0 0.0			RCD				No No
E10 Eaves (insulation a				Approved Scheme	9.62	0.0			RCD				No
E12 Gable (insulation a				Approved Scheme	7.22	0.1			RCD				No
E13 Gable (insulation a				Approved Scheme	2.79	0.0			RCD				No
E17 Corner (inverted – external area)	internal alea great		Gov	Approved Scheme	9.48	-0.0	19 -(0.09	RCD				No
P1 Party wall - Ground		aha a Ilia a		Approved Scheme	9.92	0.1			RCD				No
P2 Party wall - Intermed P4 Party wall - Roof (ins				e K1 - Default Approved Scheme	15.99 7.22	0.0 0.1		.00 .10	RCD				No No
P5 Party wall - Roof (ins				Approved Scheme	2.75	0.0			RCD				No
R1 Head of roof window		,	Inde	pendently assessed	3.62	0.1	2 0	.12	To be calcu				No
R2 Sill of roof window				pendently assessed	3.62	0.1			To be calcu				No
R3 Jamb of roof window	v			pendently assessed pendently assessed	4.20 9.60	0.1 0.0			To be calcu To be calcu				No No
R6 Flat ceiling R7 Flat ceiling (inverted)			pendently assessed	9.60 15.19	0.0			To be calcu				No
R9 Roof to wall (flat ceil				pendently assessed	11.19	0.1			To be calcu				No
E16 Corner (normal)	<i>.</i> ,		Gov	Approved Scheme	22.76	0.0	5 C	.05	RCD				No
R8 Roof to wall (rafter)				pendently assessed	5.60	0.0	ь C	.06	To be calcu				No
Y-value				0.05					W/m²K				
8.0 Pressure Testing			[Yes									



Decigned AD		4.00			m ³ /(h m ²) @ 50 D-	
Designed AP ₅₀	-0	4.00] m³/(h.m²) @ 50 Pa	
Property Tested		Yes]	
Test Method		Blower Door]	
19.0 Mechanical V						
Mechanical Ve		Vee			1	
	cal Ventilation System Present	Yes]	
	I Installation	No] 1	
	cal Ventilation data Type	Database]	
Туре			act ventilation - decent	ralised]	
	rence Number	500787]	
Duct Type	9	Rigid				
MVHR Ef	ficiency	0.00]	
Wet Roor	ms	4				
SFP from	Installer Commissioning Certificate	No]	
19.1 Mechanical e	extract ventilation - Decentralised					
SFP 0.13	Fan/Room Type Count In Room Fan 1					
	Kitchen In Room Fan Other 4					
0.11	Wet Room					
0.00 0.00	In Duct Fan Kitchen 0 In Duct Fan Other 0					
0.10	Wet Room Through Wall Fan 0					
	Kitchen					
0.10	Through Wall Fan 0 Other Wet Room					
20.0 Fans, Open F	Fireplaces, Flues					
21.0 Fixed Cooling	g System	No]	
22.0 Lighting						
No Fixed Lighti	ing	No]	
		Name Lighting	Efficacy 75.00	Power 10	Capacity 750	Count 35
24.0 Main Heating	1	Database]	
Description		aroTHERM plus	7kW]	
Percentage of	Heat	100.00			%	
Database Ref.	No.	104436]	
Fuel Type		Electricity]	
SAP Code		0			1	
In Winter		262.31			į	
In Summ		278.59			1	
Model Name		aroTHERM plus	7kW + AI]	
Manufacturer		Vaillant Group U]	
System Type		Heat Pump]	
Controls SAP (Code	2207			1	
Delayed Start S		No]	
Delayeu Stall 3	Jiai	NO]	

No

No

0.00

No

None or Unknown

2013 or later

Pump in heated space

Radiators and Underfloor

HETAS approved System

Oil Pump Inside

Fan Assisted Flue

Is MHS Pumped

Heat Emitter

Heating Pump Age

FI Case

Flue Type



Underfloor He	ating			Yes - Pipe	s in thin scre	ed			7		
Flow Tempera	-			Enter valu							
Flow Tempera				45.00							
Boiler Interloc				No							
	· · · · · · · · · · · · · · · · · · ·										
25.0 Main Heatin	g 2			None							
26.0 Heat Networ	ks			None							
	Heat Source	ce Fuel Ty	pe Heating Us	e Effic	iency Perc		Heat		ectrical Fue	el Factor	Efficiency type
Heat source 1 Heat source 2 Heat source 3 Heat source 4 Heat source 5	None None					Heat		Power Ratio			
28.0 Water Heatin	ng										
Water Heating	I			Main Heat	ting 1						
SAP Code				901							
Flue Gas Hea	t Recovery Sys	stem		No							
Waste Water I	leat Recovery	Instantaneou	s System 1	No							
Waste Water I	Heat Recovery	Instantaneou	s System 2	No]		
Waste Water I	Heat Recovery	Storage Syst	em	No					7		
Solar Panel				No					Ī		
Water use <=	125 litres/pers	on/day		Yes					Ī		
Summer Imme	ersion			No					Ī		
Cold Water So	ource			From main	ns				Ī		
Bath Count				1					Ī		
Supplementar	y Immersion			No					i i		
	, ly Heating Hot	Water		No					i i		
28.1 Showers											
Description			Shower Type)			w Rate	Rated Power	Connected (Connected	То
Bathroom 1 Ensuite 1 Ensuite 2			Combi boiler Combi boiler Combi boiler	or unvented	d hot water s	/stem /stem	I/min] 8.00 8.00 8.00 8.00	[kW]	No No No		
28.3 Waste Water	r Heat Recove	rv System					0.00				
		.,.,		11-+>0/-+	Quiling days				 _		
29.0 Hot Water C	ylinder			Hot Water	Cylinder						
Cylinder Stat				Yes							
Cylinder In He	•			Yes							
Independent T				Yes							
Insulation Typ				Measured	Loss						
Cylinder Volur	ne			250.00							
Loss				1.40					kWh/day		
Pipes insulation				,	ated primary	pipework					
In Airing Cupb	oard			No							
31.0 Thermal Sto	re			None							
34.0 Small-scale	Hydro	_	_	None						_	_
Electricity Ger	erated			0.00							
Apportioned				0.00					kWh/Year		
Connected to	dwelling's elec	tricity meter		Yes							
Electricity Ger	eration			Annual							
Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	g Sep	Oct	Nov	Dec



Recommendations Lower cost measures None Further measures to achieve even higher standards None



Property Reference	Plot	t 3							Issue	d on Date	15/12	/2023
Assessment Reference	Plot	t 3				Pro	р Туре	Ref	Plot 3			
Property	Par	ker Collins	House, P	lot 3, Parker Collins H	ouse, Riple	ey, Surre	y, GU2:	3 6JA				
SAP Rating				85 B	DER		3.22)		TER	10	.09
Environmental				97 A	% DER		3.22					
CO ₂ Emissions (t/year)					DFEE		35.6	<u> </u>		TFEE		.09
Compliance Check				0.37 See BREL		E < TFE		00		IFEE		.52
% DPER < TPER					DPER		33.5	:0		TPER	2.3	
/ DPER > IPER				36.41	DPER		33.5	0		IPER	52	.68
Assessor Details	Mrs. Ma	nal Bashir								Assessor	ID L7	97-0001
Client												
SUMMARY FOR INPU	JT DATA F	OR: New	/ Build (As Designed)								
Drientation				East								
Property Tenture				1								
Transaction Type				6								
Ferrain Type				Suburban								
I.0 Property Type				House, Semi-Detac	ned							
Which Floor				0								
2.0 Number of Storeys				3								
3.0 Date Built				2024								
3.0 Property Age Band				L								
I.0 Sheltered Sides				2								
5.0 Sunlight/Shade				Average or unknow	1							
6.0 Thermal Mass Param	eter			Precise calculation								
Thermal Mass				N/A					k	J/m²K		
7.0 Electricity Tariff				Standard								
Smart electricity meter	fitted			Yes								
Smart gas meter fitted				Yes								
7.0 Measurements					Heat	Loss Po	erimete	r Inf	ternal Flo	or Area	Average	Storey Heigl
				Baseme Ground flo	nt:	0.00 r 19.00	n		0.00 r 47.62	m²	-	0.00 m 2.39 m
				1st Store	y:	19.52	m		47.62	m²		2.67 m
				2nd Store 3rd Store	ey:	19.22 0.00 r	n		32.63 0.00 r	m²		2.38 m 0.00 m
				4th Store 5th Store		0.00 r 0.00 r			n 00.0 n 00.0			0.00 m 0.00 m
				6th Store 7th Store		0.00 r 0.00 r			r 00.0 r 00.0			0.00 m 0.00 m
O Living Area					,							
3.0 Living Area				19.62					n	n²		
3.0 External Walls Description	Туре	Constru	uction		U-Value	Карра	Gross	Nett Area	Shelter	Shelter	Openina	s Area Calculati
External Brick/Block Wall	Cavity Wall	Cavity v lightwei	vall; plasterb ght aggregat	oard on dabs or battens, e block, filled cavity, any		(kJ/m²K) 110.00			Res 0.00	None	18.68	Type Enter Gross Ar
Timber Stud Wall Dormer/Cheek Walll	Timber Frame Timber Frame	outside Timber	structure framed wall	one layer of plasterboard) one layer of plasterboard)	0.19 0.19	9.00 9.00	18.61 4.77	18.61 0.97	0.50 0.00	Room In Roo None	of 0.00 3.80	Enter Gross Ar Enter Gross Ar
0.1 Party Walls Description	Туре		Constru	ction	_				Kappa		Shelter	Shelter
Party Wall	Filled C Edge S	avity with ealing		asterboard on dabs bo e blocks, cavity or cav		ghtweigł	nt	(W/m²K) 0.00	(kJ/m²K) 110.00	(m²) 64.70	Res 0.00	None
	-	-		-								
			Construct	tion							Kan	na Aroa/~
9.2 Internal Walls Description Timber Stud Partition			Construc	t ion ard on timber frame							Kap (kJ/n 9.0	n²K)



Description	Туре	Construc	tion			Kappa (kJ/m²K)	Gross Area(m²)		a Code	Shelte Factor		ulatior ype	Openings
Main Roof	External Plane	Plasterbo	ard, ir	sulated at ceiling level	0.10	9.00	15.91	(m²) 15.9		0.00	Ente	r Gross	s 0.00
Sloping Roof	Roof External Slope	Plasterbo	ard, ir	nsulated slope	0.13	9.00	13.56	13.5	6 None	0.00		vrea r Gross	s 0.00
Lower Level Roof	Roof External Plane	Plasterboa	ard, ir	nsulated at ceiling level	0.10	9.00	15.00	15.0	0 None	0.00		vrea r Gross	s 0.00
Dormer Roof	Roof External Plane Roof	Plasterbo	ard, ir	nsulated at ceiling level	0.27	9.00	7.14	7.14	1 None	0.00	Ente	vrea r Gross vrea	s 0.00
0.2 Internal Ceilings													
Description Internal Ceiling 1 Internal Ceiling 2	Ĺ	Storey .owest occu ·1	pied	Construction Plasterboard ceiling, ca Plasterboard ceiling, ca								47	a (m²) 7.62 2.63
1.0 Heat Loss Floors	_												
Description	Type	Storey Index		Construction	- 4 - 4		J-Value W/m²K)	S	helter Code		Shelter Factor	(kJ/m ²	
Ground Floor	Ground Floor - Solid	Lowest occup	bied	Suspended concrete floor, carp	eted		0.12		None		0.00	75.00) 47.62
1.2 Internal Floors		Storey	C ~ ~	atmustion							K.		A = 0 0 (m)
Description		Storey Index	Con	struction								appa //m²K)	Area (m ²
Internal Floor Internal Floor 2				terboard ceiling, carpeted terboard ceiling, carpeted								9.00 9.00	47.62 32.63
2.0 Opening Types													
Description	Data Source	Туре		Glazing		Glazi Gap	3		G-value	Frame Type		rame actor	U Value (W/m²K)
Door Windows	Manufacturer BFRC, BSI or	Solid Doo Window	r	Double Low-E Soft	0.1		Air F Air F		0.00 0.43	Wood Wood).70 1.00	1.00 1.20
Bifold Door	CERTASS data BFRC, BSI or			Double Low-E Soft	0.1		Air F	illed	0.43	Wood	1	1.00	1.20
Dormer Windows	CERTASS data Manufacturer			Double Low-E Soft	0 1		Air F	illed	0.63	Wood).70	1.20
Roof Light	Manufacturer	Roof Light	t	Double Low-E Soft			Air F		0.63	Wood).70	1.20
3.0 Openings													
Name Front Elevation Front Elevation Rear Elevation Rear Elevation Side Elevation Rear Elevation	Opening Ty Door Windows Dormer Win Bifold Door Windows Windows Dormer Win	dows		Location External Brick/Block Wall Dormer/Cheek Wall External Brick/Block Wall External Brick/Block Wall External Brick/Block Wall Dormer/Cheek Wall			entation East East West West North West		Area (1.9 4.9 1.9 8.0 2.9 0.7 1.9	3 4 0 9 9 3		((((4	icn)))) 5)
4.0 Conservatory				None					7				
5.0 Draught Proofing				100] %				
6.0 Draught Lobby				No					1				
7.0 Thermal Bridging 7.1 List of Bridges				Calculate Bridges									
Bridge Type E1 Steel lintel with perfor E3 Sill E4 Jamb E5 Ground floor (norma E6 Intermediate floor wi E18 Party wall between E10 Eaves (insulation at E12 Gable (insulation at E13 Gable (insulation at E17 Corner (inverted – i	l) thin a dwelling dwellings t ceiling level) t ceiling level) t rafter level)		Inde Gov Gov Gov Gov Gov Gov Gov	rce Type pendently assessed Approved Scheme Approved Scheme Approved Scheme Approved Scheme Approved Scheme Approved Scheme Approved Scheme Approved Scheme	Length 11.57 6.82 25.82 19.52 38.74 13.20 9.62 7.22 2.79 9.48	Psi 0.02 0.02 0.11 0.00 0.04 0.07 0.10 0.06 -0.0	5 0.0 2 0.0 2 0.0 1 0.1 0 0.0 4 0.0 7 0.0 0 0.1 0 0.1 0 0.1 0 0.1 0 0.1 0 0.1	05 H 02 F 02 F 11 F 00 F 04 F 07 F 10 F 06 F	Reference: Hi Therm RCD RCD RCD RCD RCD RCD RCD RCD RCD RCD				Imported No No No No No No No No No
external area) P1 Party wall - Ground f P2 Party wall - Intermed P4 Party wall - Roof (ins P5 Party wall - Roof (ins R1 Head of roof window R2 Sill of roof window R3 Jamb of roof window R6 Flat ceiling R7 Flat ceiling (inverted R9 Roof to wall (flat ceil E16 Corner (normal) R8 Roof to wall (rafter)	loor liate floor within a sulation at ceiling l sulation at rafter le , ,	dwelling evel)	Gov Tabl Gov Inde Inde Inde Inde Inde Gov	Approved Scheme e K1 - Default Approved Scheme pendently assessed pendently assessed pendently assessed pendently assessed pendently assessed pendently assessed pendently assessed pendently assessed	9.92 15.99 7.22 2.75 3.62 4.20 9.60 15.19 11.19 22.76 5.60	0.11 0.00 0.12 0.12 0.12 0.12 0.12 0.06 0.06 0.06 0.06	1 0.7 0 0.0 5 0.0 5 0.0 2 0.7 2 0.7 2 0.7 5 0.0 6 0.0 6 0.0 6 0.0 5 0.0	11 F 10 F 10 F 12 T 12 T 12 T 12 T 12 T 16 T 16 T 105 F	RCD RCD RCD To be calcu To be calcu To be calcu To be calcu To be calcu To be calcu RCD To be calcu	lated lated lated lated lated			No No No No No No No No No
Y-value				0.05					W/m²K				
8.0 Pressure Testing				Yes									



Decigned AD		4.00			m ³ /(h m ²) @ 50 D-	
Designed AP ₅₀	-0	4.00] m³/(h.m²) @ 50 Pa	
Property Tested		Yes]	
Test Method		Blower Door]	
19.0 Mechanical V						
Mechanical Ve		Vee			1	
	cal Ventilation System Present	Yes]	
	I Installation	No] 1	
	cal Ventilation data Type	Database]	
Туре			act ventilation - decent	ralised]	
	rence Number	500787]	
Duct Type	9	Rigid				
MVHR Ef	ficiency	0.00]	
Wet Roor	ms	4				
SFP from	Installer Commissioning Certificate	No]	
19.1 Mechanical e	extract ventilation - Decentralised					
SFP 0.13	Fan/Room Type Count In Room Fan 1					
	Kitchen In Room Fan Other 4					
0.11	Wet Room					
0.00 0.00	In Duct Fan Kitchen 0 In Duct Fan Other 0					
0.10	Wet Room Through Wall Fan 0					
	Kitchen					
0.10	Through Wall Fan 0 Other Wet Room					
20.0 Fans, Open F	Fireplaces, Flues					
21.0 Fixed Cooling	g System	No]	
22.0 Lighting						
No Fixed Lighti	ing	No]	
		Name Lighting	Efficacy 75.00	Power 10	Capacity 750	Count 35
24.0 Main Heating	1	Database]	
Description		aroTHERM plus	7kW]	
Percentage of	Heat	100.00			%	
Database Ref.	No.	104436]	
Fuel Type		Electricity]	
SAP Code		0			1	
In Winter		262.31			į	
In Summ		278.59			1	
Model Name		aroTHERM plus	7kW + AI]	
Manufacturer		Vaillant Group U]	
System Type		Heat Pump]	
Controls SAP (Code	2207			1	
Delayed Start S		No]	
Delayeu Stall 3	Jiai	NO]	

No

No

0.00

No

None or Unknown

2013 or later

Pump in heated space

Radiators and Underfloor

HETAS approved System

Oil Pump Inside

Fan Assisted Flue

Is MHS Pumped

Heat Emitter

Heating Pump Age

FI Case

Flue Type



Underfloor He	ating			Yes - Pipe	s in thin scre	ed			7		
Flow Tempera	-			Enter valu							
Flow Tempera				45.00							
Boiler Interloc				No							
	· · · · · · · · · · · · · · · · · · ·										
25.0 Main Heatin	g 2			None							
26.0 Heat Networ	ks			None							
	Heat Source	ce Fuel Ty	pe Heating Us	e Effic	iency Perc		Heat		ectrical Fue	el Factor	Efficiency type
Heat source 1 Heat source 2 Heat source 3 Heat source 4 Heat source 5	None None					Heat		Power Ratio			
28.0 Water Heatin	ng										
Water Heating	I			Main Heat	ting 1						
SAP Code				901							
Flue Gas Hea	t Recovery Sys	stem		No							
Waste Water I	leat Recovery	Instantaneou	s System 1	No							
Waste Water I	Heat Recovery	Instantaneou	s System 2	No]		
Waste Water I	Heat Recovery	Storage Syst	em	No					7		
Solar Panel				No					Ī		
Water use <=	125 litres/pers	on/day		Yes					Ī		
Summer Imme	ersion			No					Ī		
Cold Water So	ource			From main	ns				Ī		
Bath Count				1					Ī		
Supplementar	y Immersion			No					i i		
	, ly Heating Hot	Water		No					i i		
28.1 Showers											
Description			Shower Type)			w Rate	Rated Power	Connected (Connected	То
Bathroom 1 Ensuite 1 Ensuite 2			Combi boiler Combi boiler Combi boiler	or unvented	d hot water s	/stem /stem	I/min] 8.00 8.00 8.00 8.00	[kW]	No No No		
28.3 Waste Water	r Heat Recove	rv System					0.00				
		.,.,		11-+>0/-+	Quiling days				 _		
29.0 Hot Water C	ylinder			Hot Water	Cylinder						
Cylinder Stat				Yes							
Cylinder In He	•			Yes							
Independent T				Yes							
Insulation Typ				Measured	Loss						
Cylinder Volur	ne			250.00							
Loss				1.40					kWh/day		
Pipes insulation				,	ated primary	pipework					
In Airing Cupb	oard			No							
31.0 Thermal Sto	re			None							
34.0 Small-scale	Hydro	_	_	None						_	_
Electricity Ger	erated			0.00							
Apportioned				0.00					kWh/Year		
Connected to	dwelling's elec	tricity meter		Yes							
Electricity Ger	eration			Annual							
Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	g Sep	Oct	Nov	Dec



Recommendations Lower cost measures None Further measures to achieve even higher standards None



Property Reference	I	Plot 4							Issue	d on Date	15/12	/2023
Assessment Reference	[Plot 4				Pro	o Type	Ref	Plot 4			
Property	[Parker Collins	s House, P	lot 4, Parker Collins Ho	use, Riple	ey, Surre	y, GU23	3 6JA				
SAP Rating				85 B	DER		3.18	3		TER	10	01
Environmental				97 A	% DER	< TFR	0.10	,				.23
CO ₂ Emissions (t/year)				0.37	DFEE		35.1	17		TFEE		.30
Compliance Check				See BREL		E < TFE		17			3.1	
% DPER < TPER				36.71	DPER		- 33.0)5		TPER		.22
/ DFER STFER				30.71	DFLK		33.0	5		IFEN	52	.22
Assessor Details	Mrs.	Manal Bashir								Assessor	ID L7	97-0001
Client												
SUMMARY FOR INPL	JT DATA	A FOR: Nev	v Build (As Designed)								
Drientation				East								
Property Tenture				1								
Fransaction Type				6								
Terrain Type				Suburban								
1.0 Property Type				House, Semi-Detach	ed							
Which Floor				0								
2.0 Number of Storeys				3								
.0 Date Built				2024								
3.0 Property Age Band				L								
I.0 Sheltered Sides				2								
5.0 Sunlight/Shade				Average or unknown								
6.0 Thermal Mass Parame	eter			Precise calculation								
Thermal Mass				N/A					k	J/m²K		
				Otan dand								
7.0 Electricity Tariff				Standard								
Smart electricity meter	fitted			Yes								
Smart gas meter fitted				Yes								
7.0 Measurements					Heat	Loss P	erimete	r Int	ternal Flo	or Area	Average	Storey Heig
				Basemer Ground floo	nt:	0.00 r 19.00	n		0.00 ı 47.62	m²		0.00 m 2.39 m
				1st Store	y:	19.52	n		47.62	m²		2.67 m 2.38 m
				2nd Store 3rd Store	y:	19.22 0.00 r	n		32.63 0.00 i	m²		0.00 m
				4th Store 5th Store		0.00 r 0.00 r			0.00 i 0.00 i			0.00 m 0.00 m
				6th Store 7th Store		0.00 r 0.00 r			0.00 i 0.00 i			0.00 m 0.00 m
					<i>.</i>	0.001						
3.0 Living Area				19.62					r	n²		
9.0 External Walls Description	Туре	Constr	uction		(J-Value	Kappa	Gross	Nett Area	Shelter	Shelter	Opening	Area Calculati
External Brick/Block Wall	Cavity Wal	I Cavity	wall; plasterb	oard on dabs or battens, e block, filled cavity, any		(kJ/m²K) 110.00			Res 0.00	None	20.57	Type Enter Gross Ar
Timber Stud Wall Dormer/Cheek Walll	Timber Fra Timber Fra	outside Ime Timber	structure framed wall	one layer of plasterboard) one layer of plasterboard)	0.19 0.19	9.00 9.00	18.61 4.77	18.61 0.97	0.50 0.00	Room In Roo None	of 0.00 3.80	Enter Gross Ar Enter Gross Ar
0.1 Party Walls Description	Туре	9	Constru	ction				U-Value	Карра	Area	Shelter	Shelter
Party Wall	Fille	d Cavity with e Sealing		asterboard on dabs bot e blocks, cavity or cavi		ghtweigł	nt		(kJ/m²K) 110.00		Res 0.00	None
.2 Internal Walls		2	Construct	· ·							Кар	pa Area (n
Description											παμ	
Description Timber Stud Partition				ird on timber frame							(kJ/n 9.0	n²K)



Description	Туре	Construct	tion		Kappa (kJ/m²K)A		Nett Area	Shelter Code	Shelte Factor			Opening
Main Roof	External Plane	Plasterboa	ard, insulated at ceiling le	, ,	9.00	. ,	(m²) 15.91	None	0.00	Enter (0.00
Sloping Roof	Roof External Slope		ard, insulated slope	0.13	9.00		13.56	None	0.00	Are Enter C		0.00
Lower Level Roof	Roof External Plane	Plasterboa	ard, insulated at ceiling le	vel 0.10	9.00	15.00	15.00	None	0.00	Are Enter C		0.00
Dormer Roof	Roof External Plane Roof	Plasterboa	ard, insulated at ceiling le	vel 0.27	9.00	7.14	7.14	None	0.00	Are Enter C Are	Gross	0.00
0.2 Internal Ceilings												
Description Internal Ceiling 1 Internal Ceiling 2	Ĺ	Storey owest occup 1	bied Construction Plasterboard ceili Plasterboard ceili								47	a (m²) 1.62 1.63
1.0 Heat Loss Floors Description	Туре	Storey Index	Construction			Value //m²K)	She	lter Code			Kappa kJ/m²l	a Area (m
Ground Floor	Ground Floor - Solid	I Lowest occup	ied Suspended concrete flo	or, carpeted		0.12		None		Factor (75.00	47.62
1.2 Internal Floors		0.4	0							Kan		• <i>(</i> '
Description		Storey Index	Construction							Kap (kJ/n		Area (m
Internal Floor Internal Floor 2			Plasterboard ceiling, car Plasterboard ceiling, car							9.0 9.0		47.62 32.63
2.0 Opening Types												
Description	Data Source	Туре	Glazing		Glazin Gap	g Fillin Type		i-value	Frame Type	Frai Fac		U Value (W/m²K)
Door Windows	Manufacturer BFRC, BSI or	Solid Door Window	Double Low-E	Soft 0.1	Gap	Air Fill Air Fill	ed	0.00 0.43	Wood	0.7	0	1.00 1.20
Bifold Door	CERTASS data BFRC, BSI or	а	Double Low-E			Air Fill		0.43	Wood			1.20
Dormer Windows	CERTASS data Manufacturer		Double Low-E			Air Fill		0.63	Wood			1.20
Roof Light	Manufacturer	Roof Light				Air Fill		0.63	Wood			1.20
3.0 Openings	On online Tr		Lesstian		Orio			A			D:4	- 1-
Name Front Elevation	Opening Ty Door	pe	Location External Brick/Blocl	Wall		ntation East		Area (1.93			Pit C	
Front Elevation	Windows		External Brick/Block			East		4.94			C	
Front Elevation Rear Elevation	Dormer Wine Bifold Door	dows	Dormer/Cheek Wall External Brick/Blocl			East Vest		1.90 8.09			C	
Rear Elevation	Windows		External Brick/Block			Vest		2.99			C	
Side Elevation	Windows		External Brick/Block	Wall	S	outh		2.62	2		4	5
Rear Elevation	Dormer Wine	dows	Dormer/Cheek Wall		V	Vest		1.90)		C	
4.0 Conservatory			None									
5.0 Draught Proofing			100					%				
6.0 Draught Lobby			No									
7.0 Thermal Bridging			Calculate Bridges									
I7.1 List of Bridges Bridge Type			Source Type	Length	Psi	Adiust	ed Re	ference:				Imported
E1 Steel lintel with perfo	rated steel base p	olate	Independently assessed	12.82	0.05			Therm				No
E3 Sill E4 Jamb			Gov Approved Scheme Gov Approved Scheme	8.07 38.86	0.02 0.02							No No
E5 Ground floor (normal)		Gov Approved Scheme	19.52	0.02	0.02						No
E6 Intermediate floor wit			Gov Approved Scheme	38.74	0.00							No
E18 Party wall between			Gov Approved Scheme	13.20	0.04	0.04						No
E10 Eaves (insulation at E12 Gable (insulation at	t ceiling level)		Gov Approved Scheme Gov Approved Scheme	9.62 7.22	0.07 0.10							No No
E13 Gable (insulation at			Gov Approved Scheme	2.79	0.06							No
E17 Corner (inverted – i		er than	Gov Approved Scheme	9.48	-0.09							No
external area)	-		Cau Ammanus d Osta	0.00	0.44	0.44	5					NT -
P1 Party wall - Ground f P2 Party wall - Intermed		dwelling	Gov Approved Scheme Table K1 - Default	9.92 15.99	0.11 0.00	0.11 0.00		JU .				No No
P4 Party wall - Roof (ins			Gov Approved Scheme	7.22	0.10			D				No
P5 Party wall - Roof (ins	ulation at rafter le		Gov Approved Scheme	2.75	0.05	0.05	RC	D				No
R1 Head of roof window	,		Independently assessed		0.12			be calcu				No
R2 Sill of roof window R3 Jamb of roof window	,		Independently assessed Independently assessed		0.12 0.12			be calcu be calcu				No No
R6 Flat ceiling			Independently assessed		0.12			be calcu				No
R7 Flat ceiling (inverted)			Independently assessed		0.06			be calcu				No
			Independently assessed	11.19	0.16	0.16	То	be calcu				No
R9 Roof to wall (flat ceili			Gov Approved Scheme	22.76	0.05 0.06			D be calcu	lated			No No
R9 Roof to wall (flat ceili E16 Corner (normal) R8 Roof to wall (rafter)			Independently assessed	5.60	0.00	0.00	10		latou			
E16 Corner (normal)			0.05	5.00	0.00	0.00		W/m²K				



					2,7	
Designed AP₅0		4.00			m³/(h.m²) @ 50 Pa	
Property Teste		4.00 Yes				
Test Method	u:	Blower Door			_ ๅ	
		Blower Door				
19.0 Mechanical V						
Mechanical Ve Mechanic	cal Ventilation System Present	Yes			7	
	d Installation	No				
	cal Ventilation data Type	Database				
Туре	vontilation data Typo		act ventilation - decent	ralised		
•••	rence Number	500787				
Duct Typ		Rigid			7	
MVHR E		0.00			7	
Wet Roo	-	4			7	
	n Installer Commissioning Certificate	No]	
	extract ventilation - Decentralised					
SFP 0.13 0.11 0.00 0.00 0.10 0.10 20.0 Fans, Open I	Fan/Room TypeCountIn Room Fan1Kitchen1In Room Fan Other4Wet Room0In Duct Fan Kitchen0In Duct Fan Other0Wet Room0Through Wall Fan0Kitchen0Through Wall Fan0Other Wet Room0					
21.0 Fixed Coolin	g System	No				
22.0 Lighting						
No Fixed Light	ing	No]	
		Name Lighting	Efficacy 75.00	Power 10	CapacityCount75035	
24.0 Main Heating	y 1	Database]	
Description		aroTHERM plus	7kW]	
Percentage of	Heat	100.00			%	
Database Ref.	No.	104436]	
Fuel Type		Electricity]	
SAP Code		0]	
In Winter		262.78]	
In Summ	er	278.64]	
Model Name		aroTHERM plus	7kW + Al]	
Manufacturer		Vaillant Group U	K Ltd]	
System Type		Heat Pump]	
Controls SAP	Code	2207]	
Delayed Start	Stat	No]	
HETAS approv	ved System	No			7	

No

0.00

No

None or Unknown

2013 or later

Pump in heated space

Radiators and Underfloor

Oil Pump Inside

Fan Assisted Flue

Is MHS Pumped

Heat Emitter

Heating Pump Age

FI Case

Flue Type



Underfloor He	ating			Yes - Pipe	s in thin scre	ed			7		
Flow Tempera	-			Enter valu							
Flow Tempera				45.00							
Boiler Interloc				No							
	· · · · · · · · · · · · · · · · · · ·										
25.0 Main Heatin	g 2			None							
26.0 Heat Networ	ks			None							
	Heat Source	ce Fuel Ty	pe Heating Us	e Effic	iency Perc		Heat		ectrical Fue	el Factor	Efficiency type
Heat source 1 Heat source 2 Heat source 3 Heat source 4 Heat source 5	None None					Heat		Power Ratio			
28.0 Water Heatin	ng										
Water Heating	I			Main Heat	ting 1						
SAP Code				901							
Flue Gas Hea	t Recovery Sys	stem		No							
Waste Water I	leat Recovery	Instantaneou	s System 1	No							
Waste Water I	Heat Recovery	Instantaneou	s System 2	No]		
Waste Water I	Heat Recovery	Storage Syst	em	No					7		
Solar Panel				No					Ī		
Water use <=	125 litres/pers	on/day		Yes					Ī		
Summer Imme	ersion			No					Ī		
Cold Water So	ource			From main	ns				Ī		
Bath Count				1					Ī		
Supplementar	y Immersion			No					i i		
	, ly Heating Hot	Water		No					i i		
28.1 Showers											
Description			Shower Type)			w Rate	Rated Power	Connected (Connected	То
Bathroom 1 Ensuite 1 Ensuite 2			Combi boiler Combi boiler Combi boiler	or unvented	d hot water s	/stem /stem	I/min] 8.00 8.00 8.00 8.00	[kW]	No No No		
28.3 Waste Water	r Heat Recove	rv System					0.00				
		.,.,		11-+>0/-+	Quiling days				 _		
29.0 Hot Water C	ylinder			Hot Water	Cylinder						
Cylinder Stat				Yes							
Cylinder In He	•			Yes							
Independent T				Yes							
Insulation Typ				Measured	Loss						
Cylinder Volur	ne			250.00							
Loss				1.40					kWh/day		
Pipes insulation				,	ated primary	pipework					
In Airing Cupb	oard			No							
31.0 Thermal Sto	re			None							
34.0 Small-scale	Hydro	_	_	None						_	_
Electricity Ger	erated			0.00							
Apportioned				0.00					kWh/Year		
Connected to	dwelling's elec	tricity meter		Yes							
Electricity Ger	eration			Annual							
Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	g Sep	Oct	Nov	Dec



Recommendations Lower cost measures None Further measures to achieve even higher standards None



Property Reference	l	Plot 5							Issue	d on Date	15/12	/2023
Assessment Reference		Plot 5				Pro	o Type I	Ref	Plot 5			
Property	[Parker Collins	s House, P	lot 5, Parker Collins Ho	use, Riple	ey, Surre	y, GU23	3 6JA				
SAP Rating				85 B	DER		3.22)		TER	10	.09
Environmental				97 A	% DER	< TFR	0.22	•				.09
CO ₂ Emissions (t/year)				0.37	DFEE		35.6	86		TFEE		.52
Compliance Check				See BREL		E < TFE		0			2.3	
% DPER < TPER				36.41	DPER		- 33.5	50		TPER		.68
/ DFER STFER				30.41	DFLK		33.5	50			52	.00
Assessor Details	Mrs.	Manal Bashir								Assessor	ID L7	97-0001
Client												
SUMMARY FOR INPL	JT DATA	A FOR: Nev	v Build (As Designed)								
Drientation				East								
Property Tenture				1								
Fransaction Type				6								
Ferrain Type				Suburban								
1.0 Property Type				House, Semi-Detach	ed							
Which Floor				0								
2.0 Number of Storeys				3								
3.0 Date Built				2024								
3.0 Property Age Band				L								
I.0 Sheltered Sides				2								
5.0 Sunlight/Shade				Average or unknown								
5.0 Thermal Mass Parame	eter			Precise calculation								
Thermal Mass				N/A					ŀ	J/m²K		
				Oten dend								
7.0 Electricity Tariff	<i></i>			Standard								
Smart electricity meter	fitted			Yes								
Smart gas meter fitted				Yes								
7.0 Measurements					Heat	Loss Po	erimete	r Int	ternal Flo	oor Area	Average	Storey Heig
				Basemer Ground floo	nt:	0.00 r 19.00	n		0.00 47.62	m²	-	0.00 m 2.39 m
				1st Store	y:	19.52	n		47.62	m²	:	2.67 m
				2nd Store 3rd Store	y:	19.22 0.00 r	n		32.63 0.00	m²		2.38 m 0.00 m
				4th Store 5th Store		0.00 r 0.00 r			0.00 i 0.00 i			0.00 m 0.00 m
				6th Store 7th Store	ý:	0.00 r 0.00 r	n		0.00	m²		0.00 m 0.00 m
					у.	0.001						0.00 m
3.0 Living Area				19.62					r	n²		
9.0 External Walls Description	Туре	Const	uction		11-Value	Kappa	Gross	Nett Area	Shelter	Shelter	Openinge	Area Calculati
Description External Brick/Block Wall	Cavity Wal	I Cavity	wall; plasterb	oard on dabs or battens,		Kappa (kJ/m ² K) 110.00			Res 0.00	None	18.68	Type Enter Gross Ar
Timber Stud Wall Dormer/Cheek Walll	Timber Fra Timber Fra	outside Ime Timber	structure framed wall	e block, filled cavity, any (one layer of plasterboard) (one layer of plasterboard)	0.19 0.19	9.00 9.00	18.61 4.77	18.61 0.97	0.50 0.00	Room In Roo None	of 0.00 3.80	Enter Gross Ar Enter Gross Ar
0.1 Party Walls Description	Туре	9	Constru	ction				U-Value	Kappa	Area	Shelter	Shelter
Party Wall	Fille	d Cavity with e Sealing	Single pl	asterboard on dabs bot e blocks, cavity or cavi		ghtweigł	nt		(kJ/m²K) 110.00		Res 0.00	None
	9	3	00-94	, , ,	-							
9.2 Internal Walls			Construct	tion							Kan	na Aroa/n
9.2 Internal Walls Description Timber Stud Partition			Construct	tion ard on timber frame							Kap (kJ/m 9.0	n²K)



Description	Туре	Construc	tion			Kappa (kJ/m²K)	Gross Area(m²)		a Code	Shelte Factor		ulatior ype	Openings
Main Roof	External Plane	Plasterbo	ard, ir	sulated at ceiling level	0.10	9.00	15.91	(m²) 15.9		0.00	Ente	r Gross	s 0.00
Sloping Roof	Roof External Slope	Plasterbo	ard, ir	nsulated slope	0.13	9.00	13.56	13.5	6 None	0.00		vrea r Gross	s 0.00
Lower Level Roof	Roof External Plane	Plasterboa	ard, ir	nsulated at ceiling level	0.10	9.00	15.00	15.0	0 None	0.00		vrea r Gross	s 0.00
Dormer Roof	Roof External Plane Roof	Plasterbo	ard, ir	nsulated at ceiling level	0.27	9.00	7.14	7.14	1 None	0.00	Ente	vrea r Gross vrea	s 0.00
0.2 Internal Ceilings													
Description Internal Ceiling 1 Internal Ceiling 2	Ĺ	Storey .owest occu ·1	pied	Construction Plasterboard ceiling, ca Plasterboard ceiling, ca								47	a (m²) 7.62 2.63
1.0 Heat Loss Floors	_												
Description	Type	Storey Index		Construction	- 4 - 4		J-Value W/m²K)	S	helter Code		Shelter Factor	(kJ/m ²	
Ground Floor	Ground Floor - Solid	Lowest occup	bied	Suspended concrete floor, carp	eted		0.12		None		0.00	75.00) 47.62
1.2 Internal Floors		Storey	C ~ ~	atmustion							K.		A = 0 0 (m)
Description		Storey Index	Con	struction								appa //m²K)	Area (m ²
Internal Floor Internal Floor 2				terboard ceiling, carpeted terboard ceiling, carpeted								9.00 9.00	47.62 32.63
2.0 Opening Types													
Description	Data Source	Туре		Glazing		Glazi Gap	3		G-value	Frame Type		rame actor	U Value (W/m²K)
Door Windows	Manufacturer BFRC, BSI or	Solid Doo Window	r	Double Low-E Soft	0.1		Air F Air F		0.00 0.43	Wood Wood).70 1.00	1.00 1.20
Bifold Door	CERTASS data BFRC, BSI or			Double Low-E Soft	0.1		Air F	illed	0.43	Wood	1	1.00	1.20
Dormer Windows	CERTASS data Manufacturer			Double Low-E Soft	0 1		Air F	illed	0.63	Wood).70	1.20
Roof Light	Manufacturer	Roof Light	t	Double Low-E Soft			Air F		0.63	Wood).70	1.20
3.0 Openings													
Name Front Elevation Front Elevation Rear Elevation Rear Elevation Side Elevation Rear Elevation	Opening Ty Door Windows Dormer Win Bifold Door Windows Windows Dormer Win	dows		Location External Brick/Block Wall Dormer/Cheek Wall External Brick/Block Wall External Brick/Block Wall External Brick/Block Wall Dormer/Cheek Wall			entation East East West West North West		Area (1.9 4.9 1.9 8.0 2.9 0.7 1.9	3 4 0 9 9 3		((((4	icn)))) 5)
4.0 Conservatory				None					7				
5.0 Draught Proofing				100					_] %				
6.0 Draught Lobby				No					1				
7.0 Thermal Bridging 7.1 List of Bridges				Calculate Bridges									
Bridge Type E1 Steel lintel with perfor E3 Sill E4 Jamb E5 Ground floor (norma E6 Intermediate floor wi E18 Party wall between E10 Eaves (insulation at E12 Gable (insulation at E13 Gable (insulation at E17 Corner (inverted – i	l) thin a dwelling dwellings t ceiling level) t ceiling level) t rafter level)		Inde Gov Gov Gov Gov Gov Gov Gov	rce Type pendently assessed Approved Scheme Approved Scheme Approved Scheme Approved Scheme Approved Scheme Approved Scheme Approved Scheme Approved Scheme	Length 11.57 6.82 25.82 19.52 38.74 13.20 9.62 7.22 2.79 9.48	Psi 0.02 0.02 0.11 0.00 0.04 0.07 0.10 0.06 -0.0	5 0.0 2 0.0 2 0.0 1 0.1 0 0.0 4 0.0 7 0.0 0 0.1 0 0.1 0 0.1 0 0.1 0 0.1 0 0.1	05 H 02 F 02 F 11 F 00 F 04 F 07 F 10 F 06 F	Reference: Hi Therm RCD RCD RCD RCD RCD RCD RCD RCD RCD RCD				Imported No No No No No No No No No
external area) P1 Party wall - Ground f P2 Party wall - Intermed P4 Party wall - Roof (ins P5 Party wall - Roof (ins R1 Head of roof window R2 Sill of roof window R3 Jamb of roof window R6 Flat ceiling R7 Flat ceiling (inverted R9 Roof to wall (flat ceil E16 Corner (normal) R8 Roof to wall (rafter)	loor liate floor within a sulation at ceiling l sulation at rafter le , ,	dwelling evel)	Gov Tabl Gov Inde Inde Inde Inde Inde Gov	Approved Scheme e K1 - Default Approved Scheme pendently assessed pendently assessed pendently assessed pendently assessed pendently assessed pendently assessed pendently assessed pendently assessed	9.92 15.99 7.22 2.75 3.62 4.20 9.60 15.19 11.19 22.76 5.60	0.11 0.00 0.12 0.12 0.12 0.12 0.12 0.06 0.06 0.06 0.06	1 0.7 0 0.0 5 0.0 5 0.0 2 0.7 2 0.7 2 0.7 5 0.0 6 0.0 6 0.0 6 0.0 5 0.0	11 F 10 F 10 F 12 T 12 T 12 T 12 T 12 T 16 T 16 T 105 F	RCD RCD RCD To be calcu To be calcu To be calcu To be calcu To be calcu To be calcu RCD To be calcu	lated lated lated lated lated			No No No No No No No No No
Y-value				0.05					W/m²K				
8.0 Pressure Testing				Yes									



Decigned AD		4.00			m ³ /(h m ²) @ 50 D-	
Designed AP ₅₀	-0	4.00] m³/(h.m²) @ 50 Pa	
Property Tested		Yes]	
Test Method		Blower Door]	
19.0 Mechanical V						
Mechanical Ve		Vee			1	
	cal Ventilation System Present	Yes]	
	I Installation	No] 1	
	cal Ventilation data Type	Database]	
Туре			act ventilation - decent	ralised]	
	rence Number	500787]	
Duct Type	9	Rigid				
MVHR Ef	ficiency	0.00]	
Wet Roor	ms	4				
SFP from	Installer Commissioning Certificate	No]	
19.1 Mechanical e	extract ventilation - Decentralised					
SFP 0.13	Fan/Room Type Count In Room Fan 1					
	Kitchen In Room Fan Other 4					
0.11	Wet Room					
0.00 0.00	In Duct Fan Kitchen 0 In Duct Fan Other 0					
0.10	Wet Room Through Wall Fan 0					
	Kitchen					
0.10	Through Wall Fan 0 Other Wet Room					
20.0 Fans, Open F	Fireplaces, Flues					
21.0 Fixed Cooling	g System	No]	
22.0 Lighting						
No Fixed Lighti	ing	No]	
		Name Lighting	Efficacy 75.00	Power 10	Capacity 750	Count 35
24.0 Main Heating	1	Database]	
Description		aroTHERM plus	7kW]	
Percentage of	Heat	100.00			%	
Database Ref.	No.	104436]	
Fuel Type		Electricity]	
SAP Code		0			1	
In Winter		262.31			į	
In Summ		278.59			1	
Model Name		aroTHERM plus	7kW + AI]	
Manufacturer		Vaillant Group U]	
System Type		Heat Pump]	
Controls SAP (Code	2207			1	
Delayed Start S		No]	
Delayeu Stall 3	Jiai	NO]	

No

No

0.00

No

None or Unknown

2013 or later

Pump in heated space

Radiators and Underfloor

HETAS approved System

Oil Pump Inside

Fan Assisted Flue

Is MHS Pumped

Heat Emitter

Heating Pump Age

FI Case

Flue Type



Underfloor He	ating			Yes - Pipe	s in thin scre	ed			7		
Flow Tempera	-			Enter valu							
Flow Tempera				45.00							
Boiler Interloc				No							
	· · · · · · · · · · · · · · · · · · ·										
25.0 Main Heatin	g 2			None							
26.0 Heat Networ	ks			None							
	Heat Source	ce Fuel Ty	pe Heating Us	e Effic	iency Perc		Heat		ectrical Fue	el Factor	Efficiency type
Heat source 1 Heat source 2 Heat source 3 Heat source 4 Heat source 5	None None					Heat		Power Ratio			
28.0 Water Heatin	ng										
Water Heating	I			Main Heat	ting 1						
SAP Code				901							
Flue Gas Hea	t Recovery Sys	stem		No							
Waste Water I	leat Recovery	Instantaneou	s System 1	No							
Waste Water I	Heat Recovery	Instantaneou	s System 2	No]		
Waste Water I	Heat Recovery	Storage Syst	em	No					7		
Solar Panel				No					Ī		
Water use <=	125 litres/pers	on/day		Yes					Ī		
Summer Imme	ersion			No					Ī		
Cold Water So	ource			From main	ns				Ī		
Bath Count				1					Ī		
Supplementar	y Immersion			No					i i		
	, ly Heating Hot	Water		No					i i		
28.1 Showers											
Description			Shower Type)			w Rate	Rated Power	Connected (Connected	То
Bathroom 1 Ensuite 1 Ensuite 2			Combi boiler Combi boiler Combi boiler	or unvented	d hot water s	/stem /stem	I/min] 8.00 8.00 8.00 8.00	[kW]	No No No		
28.3 Waste Water	r Heat Recove	rv System					0.00				
		.,.,		11-+>0/-+	Quiling days				 _		
29.0 Hot Water C	ylinder			Hot Water	Cylinder						
Cylinder Stat				Yes							
Cylinder In He	•			Yes							
Independent T				Yes							
Insulation Typ				Measured	Loss						
Cylinder Volur	ne			250.00							
Loss				1.40					kWh/day		
Pipes insulation				,	ated primary	pipework					
In Airing Cupb	oard			No							
31.0 Thermal Sto	re			None							
34.0 Small-scale	Hydro	_	_	None						_	_
Electricity Ger	erated			0.00							
Apportioned				0.00					kWh/Year		
Connected to	dwelling's elec	tricity meter		Yes							
Electricity Ger	eration			Annual							
Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	g Sep	Oct	Nov	Dec



Recommendations Lower cost measures None Further measures to achieve even higher standards None



Property Reference	Plo	ot 6							Issue	d on Date	15/12	/2023
Assessment Reference	Plo	ot 6				Pro	р Туре	Ref	Plot 6			
Property	Pa	rker Collins	House, P	ot 6, Parker Collins He	ouse, Ripl	ey, Surre	y, GU2	3 6JA				
SAP Rating				85 B	DER		3.18	3		TER	10	01
Environmental				97 A	% DER	< TFR	0.10	, 				.23
CO ₂ Emissions (t/year)				0.37	DFEE		35.1	17		TFEE		.30
Compliance Check				See BREL		E < TFE		17			3.1	
% DPER < TPER				36.71	DPER		33.0	15		TPER		.22
				50.71	DIER		00.0				52	.22
Assessor Details	Mrs. Ma	anal Bashir								Assessor	D L7	97-0001
Client												
SUMMARY FOR INPL	JT DATA F	OR: Nev	v Build (/	As Designed)								
Drientation				East								
Property Tenture				1								
Fransaction Type				6								
Ferrain Type				Suburban								
1.0 Property Type				House, Semi-Detacl	ned							
Which Floor				0								
2.0 Number of Storeys				3								
3.0 Date Built				2024								
8.0 Property Age Band				L								
I.0 Sheltered Sides				2								
.0 Sunlight/Shade				Average or unknown	1							
6.0 Thermal Mass Parame	eter			Precise calculation								
Thermal Mass				N/A						⟨J/m²K		
7.0 Electricity Tariff				Standard								
Smart electricity meter	fitted			Yes								
Smart gas meter fitted				Yes								
7.0 Measurements					Hoat	Loss P	orimoto	r In	ornal Fl	oor Area	Average	Storey Heigh
				Baseme	nt:	0.00 r	n		0.00	m²		0.00 m
				Ground floo 1st Store	y:	19.00 19.52	m		47.62 47.62	m²	:	2.39 m 2.67 m
				2nd Store 3rd Store		19.22 0.00 r			32.63 0.00			2.38 m 0.00 m
				4th Store	ý:	0.00 r 0.00 r	n		0.00	m²		0.00 m
				5th Store 6th Store	ý:	0.00 r	n		0.00 0.00	m²		0.00 m 0.00 m
				7th Store	y:	0.00 r	n		0.00	m²		0.00 m
3.0 Living Area				19.62						112		
9.0 External Walls												
Description	Туре	Constr			(W/m²K)	Kappa (kJ/m ² K)	Area(m ²		Res	Shelter		s Area Calculatio Type
External Brick/Block Wall	Cavity Wall	lightwe		oard on dabs or battens, e block, filled cavity, any	0.19	110.00	113.27	92.70	0.00	None	20.57	Enter Gross Are
	Timber Frame Timber Frame	Timber	framed wall (one layer of plasterboard) one layer of plasterboard)	0.19 0.19	9.00 9.00	18.61 4.77	18.61 0.97	0.50 0.00	Room In Roo None	of 0.00 3.80	Enter Gross Are Enter Gross Are
Timber Stud Wall Dormer/Cheek Walll	ining of i raine		•									.
Dormer/Cheek Walli 3.1 Party Walls			Construe	non				U-Value (W/m ² K)			Shelter Res	Shelter
Dormer/Cheek Wall	Туре		Construe									
Dormer/Cheek Walli 9.1 Party Walls	Туре	Cavity with Sealing	Single pla	asterboard on dabs bo e blocks, cavity or cav		ghtweigl	ht	0.00	110.00	64.70	0.00	None
Dormer/Cheek Walli 0.1 Party Walls Description	Type Filled C		Single pla	asterboard on dabs bo		ghtweigl	ht	0.00	110.00	64.70	0.00	None
Dormer/Cheek Walli D.1 Party Walls Description Party Wall	Type Filled C		Single pla	asterboard on dabs bo e blocks, cavity or cav		ghtweigl	ht	0.00	110.00	64.70	0.00 Kap (kJ/m	pa Area (m



Description	Туре	Construct	tion		Kappa (kJ/m²K)A		Nett Area	Shelter Code	Shelte Factor			Opening
Main Roof	External Plane	Plasterboa	ard, insulated at ceiling le	, ,	9.00	. ,	(m²) 15.91	None	0.00	Enter (0.00
Sloping Roof	Roof External Slope		ard, insulated slope	0.13	9.00		13.56	None	0.00	Are Enter C		0.00
Lower Level Roof	Roof External Plane	Plasterboa	ard, insulated at ceiling le	vel 0.10	9.00	15.00	15.00	None	0.00	Are Enter C		0.00
Dormer Roof	Roof External Plane Roof	Plasterboa	ard, insulated at ceiling le	vel 0.27	9.00	7.14	7.14	None	0.00	Are Enter C Are	Gross	0.00
0.2 Internal Ceilings												
Description Internal Ceiling 1 Internal Ceiling 2	Ĺ	Storey owest occup 1	bied Construction Plasterboard ceili Plasterboard ceili								47	a (m²) 1.62 1.63
1.0 Heat Loss Floors Description	Туре	Storey Index	Construction			Value //m²K)	She	lter Code			Kappa kJ/m²l	a Area (m
Ground Floor	Ground Floor - Solid	Lowest occup	ied Suspended concrete flo	or, carpeted		0.12		None		Factor (75.00	47.62
1.2 Internal Floors		0.4	0							Kan		• <i>(</i> '
Description		Storey Index	Construction							Kap (kJ/n		Area (m
Internal Floor Internal Floor 2			Plasterboard ceiling, car Plasterboard ceiling, car							9.0 9.0		47.62 32.63
2.0 Opening Types												
Description	Data Source	Туре	Glazing		Glazin Gap	g Fillin Type		i-value	Frame Type	Frai Fac		U Value (W/m²K)
Door Windows	Manufacturer BFRC, BSI or	Solid Door Window	Double Low-E	Soft 0.1	Gap	Air Fill Air Fill	ed	0.00 0.43	Wood	0.7	0	1.00 1.20
Bifold Door	CERTASS data BFRC, BSI or	а	Double Low-E			Air Fill		0.43	Wood			1.20
Dormer Windows	CERTASS data Manufacturer		Double Low-E			Air Fill		0.63	Wood			1.20
Roof Light	Manufacturer	Roof Light				Air Fill		0.63	Wood			1.20
3.0 Openings	On online Tr		Lesstian		Orio			A			D:4	- h
Name Front Elevation	Opening Ty Door	pe	Location External Brick/Blocl	Wall		ntation East		Area (1.93			Pit C	
Front Elevation	Windows		External Brick/Block			East		4.94			C	
Front Elevation Rear Elevation	Dormer Wine Bifold Door	dows	Dormer/Cheek Wall External Brick/Blocl			East Vest		1.90 8.09			C	
Rear Elevation	Windows		External Brick/Block			Vest		2.99			C	
Side Elevation	Windows		External Brick/Block	Wall	S	outh		2.62	2		4	5
Rear Elevation	Dormer Wine	dows	Dormer/Cheek Wall		V	Vest		1.90)		C	
4.0 Conservatory			None									
5.0 Draught Proofing			100					%				
6.0 Draught Lobby			No									
7.0 Thermal Bridging			Calculate Bridges									
I7.1 List of Bridges Bridge Type			Source Type	Length	Psi	Adiust	ed Re	ference:				Imported
E1 Steel lintel with perfo	rated steel base p	olate	Independently assessed	12.82	0.05			Therm				No
E3 Sill E4 Jamb			Gov Approved Scheme Gov Approved Scheme	8.07 38.86	0.02 0.02							No No
E5 Ground floor (normal)		Gov Approved Scheme	19.52	0.02	0.02						No
E6 Intermediate floor wit			Gov Approved Scheme	38.74	0.00							No
E18 Party wall between			Gov Approved Scheme	13.20	0.04	0.04						No
E10 Eaves (insulation at E12 Gable (insulation at	t ceiling level)		Gov Approved Scheme Gov Approved Scheme	9.62 7.22	0.07 0.10							No No
E13 Gable (insulation at			Gov Approved Scheme	2.79	0.06							No
E17 Corner (inverted – i		er than	Gov Approved Scheme	9.48	-0.09							No
external area)	-		Cau Ammanus d Osta	0.00	0.44	0.44	5					NT -
P1 Party wall - Ground f P2 Party wall - Intermed		dwelling	Gov Approved Scheme Table K1 - Default	9.92 15.99	0.11 0.00	0.11 0.00		JU .				No No
P4 Party wall - Roof (ins			Gov Approved Scheme	7.22	0.10			D				No
P5 Party wall - Roof (ins	ulation at rafter le		Gov Approved Scheme	2.75	0.05	0.05	RC	D				No
R1 Head of roof window	,		Independently assessed		0.12			be calcu				No
R2 Sill of roof window R3 Jamb of roof window	,		Independently assessed Independently assessed		0.12 0.12			be calcu be calcu				No No
R6 Flat ceiling			Independently assessed		0.12			be calcu				No
R7 Flat ceiling (inverted)			Independently assessed		0.06			be calcu				No
			Independently assessed	11.19	0.16	0.16	То	be calcu				No
R9 Roof to wall (flat ceili			Gov Approved Scheme	22.76	0.05 0.06			D be calcu	lated			No No
R9 Roof to wall (flat ceili E16 Corner (normal) R8 Roof to wall (rafter)			Independently assessed	5.60	0.00	0.00	10		latou			
E16 Corner (normal)			0.05	5.00	0.06	0.00		W/m²K				



					2,7	
Designed AP₅0		4.00			m³/(h.m²) @ 50 Pa	
Property Teste		4.00 Yes				
Test Method	u:	Blower Door			_ ๅ	
		Blower Door				
19.0 Mechanical V						
Mechanical Ve Mechanic	cal Ventilation System Present	Yes			7	
	d Installation	No				
	cal Ventilation data Type	Database				
Туре	vontilation data Typo		act ventilation - decent	ralised		
•••	rence Number	500787				
Duct Typ		Rigid			7	
MVHR E		0.00			7	
Wet Roo	-	4			7	
	n Installer Commissioning Certificate	No]	
	extract ventilation - Decentralised					
SFP 0.13 0.11 0.00 0.00 0.10 0.10 20.0 Fans, Open I	Fan/Room TypeCountIn Room Fan1Kitchen1In Room Fan Other4Wet Room0In Duct Fan Kitchen0In Duct Fan Other0Wet Room0Through Wall Fan0Kitchen0Through Wall Fan0Other Wet Room0					
21.0 Fixed Coolin	g System	No				
22.0 Lighting						
No Fixed Light	ing	No]	
		Name Lighting	Efficacy 75.00	Power 10	CapacityCount75035	
24.0 Main Heating	y 1	Database]	
Description		aroTHERM plus	7kW]	
Percentage of	Heat	100.00			%	
Database Ref.	No.	104436]	
Fuel Type		Electricity]	
SAP Code		0]	
In Winter		262.78]	
In Summ	er	278.64]	
Model Name		aroTHERM plus	7kW + Al]	
Manufacturer		Vaillant Group U	K Ltd]	
System Type		Heat Pump]	
Controls SAP	Code	2207]	
Delayed Start	Stat	No]	
HETAS approv	ved System	No			7	

No

0.00

No

None or Unknown

2013 or later

Pump in heated space

Radiators and Underfloor

Oil Pump Inside

Fan Assisted Flue

Is MHS Pumped

Heat Emitter

Heating Pump Age

FI Case

Flue Type



Underfloor He	ating			Yes - Pipe	s in thin scre	ed			7		
Flow Tempera	-			Enter valu							
Flow Tempera				45.00							
Boiler Interloc				No							
	· · · · · · · · · · · · · · · · · · ·										
25.0 Main Heatin	g 2			None							
26.0 Heat Networ	ks			None							
	Heat Source	ce Fuel Ty	pe Heating Us	e Effic	iency Perc		Heat		ectrical Fue	el Factor	Efficiency type
Heat source 1 Heat source 2 Heat source 3 Heat source 4 Heat source 5	None None					Heat		Power Ratio			
28.0 Water Heatin	ng										
Water Heating	I			Main Heat	ting 1						
SAP Code				901							
Flue Gas Hea	t Recovery Sys	stem		No							
Waste Water I	leat Recovery	Instantaneou	s System 1	No							
Waste Water I	Heat Recovery	Instantaneou	s System 2	No]		
Waste Water I	Heat Recovery	Storage Syst	em	No					7		
Solar Panel				No					Ī		
Water use <=	125 litres/pers	on/day		Yes					Ī		
Summer Imme	ersion			No					Ī		
Cold Water So	ource			From main	ns				Ī		
Bath Count				1					Ī		
Supplementar	y Immersion			No					i i		
	, ly Heating Hot	Water		No					i i		
28.1 Showers											
Description			Shower Type)			w Rate	Rated Power	Connected (Connected	То
Bathroom 1 Ensuite 1 Ensuite 2			Combi boiler Combi boiler Combi boiler	or unvented	d hot water s	/stem /stem	I/min] 8.00 8.00 8.00 8.00	[kW]	No No No		
28.3 Waste Water	r Heat Recove	rv System					0.00				
		.,.,		11-+>0/-+	Quiling days				 _		
29.0 Hot Water C	ylinder			Hot Water	Cylinder						
Cylinder Stat				Yes							
Cylinder In He	•			Yes							
Independent T				Yes							
Insulation Typ				Measured	Loss						
Cylinder Volur	ne			250.00							
Loss				1.40					kWh/day		
Pipes insulation				,	ated primary	pipework					
In Airing Cupb	oard			No							
31.0 Thermal Sto	re			None							
34.0 Small-scale	Hydro	_	_	None						_	_
Electricity Ger	erated			0.00							
Apportioned				0.00					kWh/Year		
Connected to	dwelling's elec	tricity meter		Yes							
Electricity Ger	eration			Annual							
Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	g Sep	Oct	Nov	Dec



Recommendations Lower cost measures None Further measures to achieve even higher standards None



Property Reference	Plo	t 7							Issue	d on Date	15/12	/2023
Assessment Reference	Plo	t 7				Pro	р Туре	Ref	Plot 7			
Property	Par	ker Collins	House, Pl	ot 7, Parker Collins H	ouse, Ripl	ey, Surre	y, GU2	3 6JA				
SAP Rating				84 B	DER		3.47	7		TER	11	.11
Environmental				97 A		< TER	0.41					5.77
CO ₂ Emissions (t/year)				0.4	DFEE		40.2	00		TFEE		.33
Compliance Check				See BREL		E < TFE					2.0	
% DPER < TPER				37.94	DPER		36.0	18		TPER		.13
				37.94	DIER		30.0	00				. 13
Assessor Details	Mrs. Ma	nal Bashir								Assessor	ID L7	97-0001
Client												
SUMMARY FOR INPU	JT DATA F	OR: New	Build (As Designed)								
Prientation				East								
Property Tenture				1								
ransaction Type				6								
errain Type				Suburban								
.0 Property Type				House, Detached								
Which Floor				0								
.0 Number of Storeys				3								
.0 Date Built				2024								
.0 Property Age Band				1								
.0 Sheltered Sides				2								
.0 Sunlight/Shade				Average or unknow								
.0 Thermal Mass Param	otor			Precise calculation	1							
Thermal Mass Parame	eter			N/A						J/m²K		
				IN/A					K	J/III-K		
.0 Electricity Tariff				Standard								
Smart electricity meter	fitted			Yes								
Smart gas meter fitted				Yes								
.0 Measurements							_					_
				Baseme		t Loss Po 0.00 r		r Int	ernal Flo 0.00 r			e Storey Heig 0.00 m
				Ground flo 1st Store		29.47 29.00			47.62 47.62			2.39 m 2.67 m
				2nd Store	ey:	25.27	m		32.63	m²		2.38 m
				3rd Store 4th Store	ý:	0.00 r 0.00 r	n		n 00.0 n 00.0	m²		0.00 m 0.00 m
				5th Store 6th Store		0.00 r 0.00 r			r 00.0 r 00.0			0.00 m 0.00 m
				7th Store		0.00 r			0.00 r	m²		0.00 m
.0 Living Area				19.62					n	n²		
0 E												
.0 External walls		Constru			(W/m²K)	Kappa (kJ/m²K)	Area(m ²)		Res	Shelter		s Area Calculati Type
Description	Туре		بطرمةمما مراامي	oard on dabs or battens,	` 0.19 ′	`110.00´	177.92	157.35	0.00	None	20.57	Enter Gross Ar
	Type Cavity Wall	lightwei	ght aggregate	e block, filled cavity, any							of 0.00	Enter Gross Ar
Description		lightwei outside Timber	ght aggregate structure framed wall (0.19 0.19	9.00 9.00	18.61 4.77	18.61 0.97	0.50 0.00	Room In Roo None	3.80	Enter Gross Ar
External Brick/Block Wall	Cavity Wall Timber Frame	lightwei outside Timber	ght aggregate structure framed wall (e block, filled cavity, any one layer of plasterboard)								Enter Gross Ar
Description External Brick/Block Wall Timber Stud Wall Dormer/Cheek Walll	Cavity Wall Timber Frame	lightwei outside Timber	ght aggregate structure framed wall (e block, filled cavity, any one layer of plasterboard) one layer of plasterboard)				0.97 U-Value	0.00 Kappa	None Area	3.80 Shelter	Enter Gross Ar Shelter
Description External Brick/Block Wall Timber Stud Wall Dormer/Cheek Walll	Cavity Wall Timber Frame Timber Frame Type Filled C	lightwei outside Timber Timber	ght aggregate structure framed wall (framed wall (Construe Single pla	e block, filled cavity, any one layer of plasterboard) one layer of plasterboard) ction asterboard on dabs bo	0.19 th sides, I	9.00	4.77	0.97 U-Value	0.00	None Area	3.80	
Description External Brick/Block Wall Timber Stud Wall Dormer/Cheek Walll 1.1 Party Walls Description	Cavity Wall Timber Frame Timber Frame	lightwei outside Timber Timber	ght aggregate structure framed wall (framed wall (Construe Single pla	e block, filled cavity, any one layer of plasterboard) one layer of plasterboard)	0.19 th sides, I	9.00	4.77	0.97 U-Value (W/m²K)	0.00 Kappa (kJ/m²K)	None Area (m ²)	3.80 Shelter Res	Shelter
Description External Brick/Block Wall Timber Stud Wall Dormer/Cheek Walll .1 Party Walls Description Party Wall	Cavity Wall Timber Frame Timber Frame Type Filled C	lightwei outside Timber Timber Cavity with ealing	ght aggregate structure framed wall (framed wall (Construe Single pla	e block, filled cavity, any one layer of plasterboard) one layer of plasterboard) ction asterboard on dabs bo e blocks, cavity or cav	0.19 th sides, I	9.00	4.77	0.97 U-Value (W/m²K)	0.00 Kappa (kJ/m²K)	None Area (m ²)	3.80 Shelter Res	Shelter None



											<i></i>	
Description	Туре	Construc	tion		alue Kappa n²K)(kJ/m²K		Nett Area	Shelter Code	Shelte Factor		latior pe	Openings
Main Roof	External Plane	Plasterbo	ard, insulated at ceiling	level 0.1	0 9.00	15.91	(m²) 15.91	None	0.00	Enter	Gross	s 0.00
Sloping Roof	Roof External Slope	Plasterbo	ard, insulated slope	0.1	13 9.00	13.56	13.56	None	0.00	Enter		s 0.00
Lower Level Roof	Roof External Plane	Plasterbo	ard, insulated at ceiling	level 0.1	10 9.00	15.00	15.00	None	0.00	Ar Enter	ea Gross	s 0.00
Dormer Roof	Roof External Plane Roof		ard, insulated at ceiling		9.00	7.14	7.14	None	0.00	Enter	rea Gross rea	s 0.00
0.2 Internal Ceilings												
Description Internal Ceiling 1 Internal Ceiling 2		Storey owest occu 1	Construction pied Plasterboard ce Plasterboard ce								47	a (m²) 7.62 2.63
1.0 Heat Loss Floors Description	Туре	Storey Index	Construction			U-Value (W/m²K)	She	lter Code		Shelter Factor	Kapp (kJ/m²	a Area (m²
Ground Floor	Ground Floor - Solid	Lowest occu	bied Suspended concrete	floor, carpeted		0.12		None		0.00	75.00	
1.2 Internal Floors		_										
Description		Storey Index	Construction								ppa m²K)	Area (m ²
Internal Floor Internal Floor 2			Plasterboard ceiling, c Plasterboard ceiling, c	arpeted chipboa arpeted chipboa	ard floor ard floor						.00 .00	47.62 32.63
2.0 Opening Types												
Description	Data Source	Туре	Glazing		Glaz Ga			G-value	Frame Type		ame ctor	U Value (W/m²K)
Door Windows	Manufacturer BFRC, BSI or	Solid Doo Window	r Double Low	v-E Soft 0.1		Air Fi Air Fi	lled	0.00 0.43	Wood Wood	0.	.70 .00	1.00 1.20
Bifold Door	CERTASS data BFRC, BSI or	Window	Double Low	v-E Soft 0.1		Air Fi	lled	0.43	Wood	1.	.00	1.20
Dormer Windows	CERTASS data Manufacturer	Window	Double Low			Air Fi		0.63	Wood		70	1.20
Roof Light	Manufacturer	Roof Ligh	t Double Low	v-E Soft 0.1		Air Fi	lled	0.63	Wood	0.	.70	1.20
3.0 Openings Name	Opening Ty	ne	Location		Or	ientation		Area (m²)		Pit	ch
Front Elevation Front Elevation Front Elevation Rear Elevation Side Elevation Rear Elevation	Door Windows Dormer Win Bifold Door Windows Windows Dormer Wind	dows	External Brick/Blc External Brick/Blc Dormer/Cheek W External Brick/Blc External Brick/Blc External Brick/Blc Dormer/Cheek W	ock Wall /alll ock Wall ock Wall ock Wall		East East West West South West		1.93 4.94 1.90 8.09 2.99 2.62 1.90	3 4 0 9 9 2		((((4))) 5
4.0 Conservatory			None									
5.0 Draught Proofing			100					%				
6.0 Draught Lobby			No									
7.0 Thermal Bridging 7.1 List of Bridges			Calculate Bridges	6								
Bridge Type E1 Steel lintel with perfo E3 Sill E4 Jamb E5 Ground floor (normal E6 Intermediate floor wit E10 Eaves (insulation at E12 Gable (insulation at E13 Gable (insulation at E17 Corner (inverted – i) hin a dwelling ceiling level) ceiling level) rafter level)		Source Type Independently assess Gov Approved Schem Gov Approved Schem Gov Approved Schem Gov Approved Schem Gov Approved Schem Gov Approved Schem Gov Approved Schem	ed 12 e 8. e 38 e 29 e 54 e 9. e 14 e 5.	ngth Ps .82 0.0 07 0.0 .86 0.0 .47 0.1 .71 0.0 65 0.0 .44 0.1 50 0.0 48 -0.0	5 0.0 2 0.0 2 0.0 1 0.1 0 0.0 7 0.0 0 0.1 6 0.0	5 Hi 2 RC 2 RC 1 RC 0 RC 7 RC 0 RC 6 RC					Imported No No No No No No No No No
external area) R1 Head of roof window R2 Sill of roof window R3 Jamb of roof window R6 Flat ceiling R7 Flat ceiling (inverted) R9 Roof to wall (flat ceili E16 Corner (normal) R8 Roof to wall (rafter)	1		Independently assess Independently assess Independently assess Independently assess Independently assess Gov Approved Schem- Independently assess	ed 3. ed 4. ed 9. ed 15 ed 11 e 36	62 0.1 62 0.1 20 0.1 60 0.0 .19 0.1 .04 0.0 60 0.0	2 0.1 2 0.1 6 0.0 6 0.0 6 0.1 5 0.0	2 To 2 To 6 To 6 To 6 To 5 R0	be calcu be calcu be calcu be calcu be calcu be calcu CD be calcu	lated lated lated lated lated			No No No No No No
Y-value			0.04					W/m²K				
8.0 Pressure Testing			Yes									
Designed AP ₅₀			4.00					m³/(h.m ³	²) @ 50	Pa		
Property Tested?			Yes									



19.0 Mechanical Ventilation

Mechanical Ventilation	
Mechanical Ventilation System Present	Yes
Approved Installation	No
Mechanical Ventilation data Type	Database
Туре	Mechanical extract ventilation - decentralised
MV Reference Number	500787
Duct Type	Rigid
MVHR Efficiency	0.00
Wet Rooms	4
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

SFP 0.13	Fan/Room Type In Room Fan	Count
0.13	Kitchen	I
0.11	In Room Fan Other	4
0.11	Wet Room	4
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.10	Through Wall Fan Kitchen	0
0.10	Through Wall Fan Other Wet Room	0

20.0 Fans, Open Fireplaces, Flues

No 21.0 Fixed Cooling System 22.0 Lighting No Fixed Lighting No Efficacy 75.00 **Power** 10 Capacity 750 Count Name Lighting 35 24.0 Main Heating 1 Database aroTHERM plus 7kW Description Percentage of Heat 100.00 % Database Ref. No. 104436 Electricity Fuel Type 0 SAP Code 265.30 In Winter 278.91 In Summer aroTHERM plus 7kW + AI Model Name Manufacturer Vaillant Group UK Ltd System Type Heat Pump Controls SAP Code 2207 **Delayed Start Stat** No HETAS approved System No Oil Pump Inside No FI Case 0.00 None or Unknown Flue Type No Fan Assisted Flue Is MHS Pumped Pump in heated space 2013 or later Heating Pump Age Heat Emitter Radiators and Underfloor Underfloor Heating Yes - Pipes in thin screed Flow Temperature Enter value Flow Temperature Value 45.00



Boiler Interlock	ζ.			No									
25.0 Main Heating	j 2			None									
26.0 Heat Networl	ks			None									
	Heat Source	Fuel Ty	be Heating Us		Efficiency	Percentage Heat	Of Heat	Heat Power Ratio	r	trical	Fuel Factor	Effici	ency type
Heat source 1 Heat source 2 Heat source 3 Heat source 4 Heat source 5	None None None None None							Ruto					
28.0 Water Heatin	g												
Water Heating				Main	Heating 1								
SAP Code				901									
Flue Gas Heat	Recovery Syster	m		No									
Waste Water H	leat Recovery Ins	stantaneous	System 1	No									
Waste Water H	leat Recovery Ins	stantaneous	System 2	No									
Waste Water H	leat Recovery Sto	orage Syste	m	No									
Solar Panel				No									
Water use <= 1	125 litres/person/	day		Yes									
Summer Imme	rsion			No									
Cold Water So	urce			From	mains								
Bath Count				1									
Supplementary	/ Immersion			No									
Immersion Onl	y Heating Hot Wa	ater		No									
28.1 Showers													
Description			Shower Type	e			Flow Rate			onnecte	ed Connecte	ed To	
Bathroom 1 Ensuite 1 Ensuite 2			Combi boiler Combi boiler Combi boiler	or unve	ented hot w	ater system	[l/min] 8.00 8.00 8.00	[kW]		No No No			
28.3 Waste Water	Heat Recovery	System	-			y							
29.0 Hot Water Cy	/linder			Hot W	/ater Cylind	ler							
cylinder Stat				Yes	,								
Cylinder In Hea	ated Space			Yes									
Independent Ti	-			Yes									
Insulation Type	9			Meas	ured Loss								
Cylinder Volum				250.0	0					L			
Loss				1.40						kWh/da	ау		
Pipes insulation	n			Fully i	insulated pr	rimary pipewo	ork						
In Airing Cupbo	pard			No									
31.0 Thermal Stor	re			None									
34.0 Small-scale I	Hydro			None									
Electricity Gen	erated			0.00									
Apportioned				0.00						kWh/Ye	ear		
Connected to c	dwelling's electric	ity meter		Yes									
Electricity Gene	eration			Annua	al								
Jan	Feb	Mar	Apr	Мау	Ju	n Ju	I A	ug	Sep	Oc	t No	v	Dec

Recommendations Lower cost measures

None



Property Reference	Ple	ot 8								Issued	on Date	15/12	2/2023
Assessment Reference	Pl	ot 8					Pro	о Туре	Ref	Plot 8			
Property	Pa	arker Collins	House, Pl	ot 8, Parke	er Collins Ho	use, Ripl	ey, Surre	y, GU2	3 6JA				
SAP Rating				84 B		DER		3.32	2		ER	9.9	95
Environmental				97 A		% DER	< TER						6.63
CO₂ Emissions (t/year)				0.47		DFEE		41.1	16		FEE		.73
Compliance Check				See BR	=]	% DFE	E < TFE					7.9	
% DPER < TPER				34.30		DPER		34.3	35		PER		2.28
Assessor Details	Mrs. M	anal Bashir								A	Assesso	r ID L7	97-0001
Client													
SUMMARY FOR INPU	JT DATA I	FOR: New	/ Build (/	As Desig	gned)								
rientation				East									
roperty Tenture				1									
ransaction Type				6									
errain Type				Suburba	n								
.0 Property Type				House, [Detached								
Which Floor				0									
.0 Number of Storeys				2									
.0 Date Built				2024									
.0 Property Age Band				L									
.0 Sheltered Sides				2									
.0 Sunlight/Shade					or unknowr	1							
.0 Thermal Mass Parame	ter				calculation								
Thermal Mass				N/A	carculation					k.	J/m²K		
.0 Electricity Tariff				Standard	b								
Smart electricity meter f Smart gas meter fitted	fitted			Yes									
-				Tes									
7.0 Measurements							Loss P	erimete	er In	ternal Flo	or Area	Average	e Storey Heig
					Basemer Ground floo		0.00 r 41.75			0.00 m 82.86 r			0.00 m 2.39 m
					1st Store 2nd Store		25.16 25.27			73.13 r 32.63 r			2.67 m 2.38 m
					3rd Store 4th Store	y:	0.00 r 0.00 r	n		0.00 m 0.00 m	1 ²		0.00 m 0.00 m
					5th Store	y:	0.00 r	n		0.00 m	1 ²		0.00 m
					6th Store 7th Store		0.00 r 0.00 r			0.00 m 0.00 m			0.00 m 0.00 m
.0 Living Area				20.20						m	2		
0.0 External Walls													
Description	Туре	Constru	uction				Kappa (kJ/m²K)		Nett Area) (m²)	Shelter Res	Shelter	Opening	s Area Calculat Type
External Brick/Block Wall	Cavity Wall	lightwei	vall; plasterbo ght aggregate			0.19	110.00	193.52		0.00	None	35.68	Enter Gross A
Wall to Garage	Cavity Wall	Cavity v lightwei	structure vall; plasterbo ght aggregate structure			0.19	110.00	12.57	12.57	0.00	None	0.00	Enter Gross A
.1 Party Walls	_												
Description	Туре		Construc							Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall		Cavity with Sealing			on dabs bo avity or cavi		ightweigl	nt	0.00	110.00	64.70	0.00	None
.2 Internal Walls Description			Construct	ion								Kap	opa Area (r



10.0 External Roofs Description	Туре	Construc	tion		U-Value (W/m²K)	Kappa (kJ/m²K)	Gros: Area(n	s Ne 1²) Are (m	a Code		r Calculat r Type		Openings
Main Roof	External Plane	Plasterboa	ard, i	nsulated at ceiling level	0.10	9.00	73.13			0.00	Enter Gr	oss	0.00
Terrace Roof	Roof External Flat	Plasterboa	ard, i	nsulated flat roof	0.13	9.00	7.25	7.2	5 None	0.00	Area Enter Gr	oss	0.00
Bay Roof	Roof External Flat Roof	Plasterboa	ard, i	nsulated flat roof	0.15	9.00	2.51	2.5	1 None	0.00	Area Enter Gr Area	oss	0.00
10.2 Internal Ceilings Description Internal Ceiling 1		torey owest occu	pied	Construction Plasterboard ceiling, car	peted chip	board flo	or				A	rea 73.1	(m²) 13
11.0 Heat Loss Floors Description	Туре	Storey Index	ſ	Construction			-Value	5	Shelter Code				Area (m²)
Ground Floor	Ground Floor - Solid	Lowest occup	bied	Suspended concrete floor, carp	eted	()	V/m²K) 0.12		None			/ m²K) 5.00) 82.86
11.2 Internal Floors													
Description		Storey Index		struction							Kapp (kJ/m ²	K)	Area (m²)
Internal Floor			Plas	sterboard ceiling, carpeted	chipboard f	loor					9.00		73.13
12.0 Opening Types		_								_	_		
Description	Data Source	Туре		Glazing		Glaziı Gap	,	illing Type	G-value	Frame Type	Facto	or (U Value (W/m ² K)
Door Windows	Manufacturer BFRC, BSI or	Solid Door Window	r	Double Low-E Soft	0.1			⁻ Filled ⁻ Filled	0.00 0.43	Wood Wood	0.70 1.00		1.00 1.20
Bifold Door	CERTASS data BFRC, BSI or	Window		Double Low-E Soft	D.1		Ai	⁻ Filled	0.43	Wood	1.00		1.20
Dormer Windows Roof Light	CERTASS data Manufacturer Manufacturer	Window Roof Light	t	Double Low-E Soft (Double Low-E Soft (Filled Filled	0.63 0.63	Wood Wood	0.70 0.70		1.20 1.20
13.0 Openings													
Name Front Elevation Front Elevation Rear Elevation Rear Elevation Side Elevation Side Elevation	Opening Ty Door Windows Bifold Door Windows Windows Bifold Door	pe		Location External Brick/Block Wall External Brick/Block Wall External Brick/Block Wall External Brick/Block Wall External Brick/Block Wall External Brick/Block Wall		5	entatio East East West West South North North	n	Area 2.6 9.3 10 4.0 3.9 2.3 1.9	35 36 96 58 51 39		Pitcl 0 0 0 45 0 0	h
14.0 Conservatory				None					7				
15.0 Draught Proofing				100					%				
16.0 Draught Lobby				No									
17.0 Thermal Bridging				Calculate Bridges									
17.1 List of Bridges Bridge Type E1 Steel lintel with perfor E3 Sill E4 Jamb E5 Ground floor (norma E6 Intermediate floor wi E10 Eaves (insulation at E12 Gable (insulation at E14 Flat roof E17 Corner (inverted – i	l) thin a dwelling t ceiling level) t ceiling level)		Inde Gov Gov Gov Gov Tab	Approved Scheme Approved Scheme Approved Scheme Approved Scheme Approved Scheme Approved Scheme Approved Scheme Approved Scheme e K1 - Default Approved Scheme	Length 22.14 15.58 51.25 41.75 25.16 19.23 20.59 4.55 14.90	Psi 0.05 0.02 0.02 0.11 0.00 0.07 0.10 0.16 -0.05)))	0.05 0.02 0.02 0.11 0.00 0.07 0.10 0.16	Reference Hi Therm RCD RCD RCD RCD RCD RCD RCD	:		I	mported No No No No No No No No
external area) E16 Corner (normal) E15 Flat roof with parap E24 Eaves (insulation a		erted)	Tab	Approved Scheme e K1 - Default e K1 - Default	35.14 6.39 14.54	0.05 0.30 0.15)	0.05 0.30 0.15	RCD				No No No
Y-value				0.04					W/m²K				
18.0 Pressure Testing				Yes									
Designed AP50				4.00					m³/(h.r	n²) @ 50	Pa		
Property Tested?				Yes									
Test Method				Blower Door									
19.0 Mechanical Ventilatio	n												
Mechanical Ventilation	ı								_				
Mechanical Ventil:	ation System Pres	ent		Yes									
Weenaniear ventil													



Mechanical Ventilation data Type	Database
Туре	Mechanical extract ventilation - decentralised
MV Reference Number	500787
Duct Type	Rigid
MVHR Efficiency	0.00
Wet Rooms	4
SFP from Installer Commissioning Certificate	No

No

No

Name Lighting

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.13	In Room Fan	1
	Kitchen	
0.11	In Room Fan Other	4
	Wet Room	
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other	0
	Wet Room	
0.10	Through Wall Fan	0
	Kitchen	
0.10	Through Wall Fan	0
	Other Wet Room	

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

22.0	Lighting
------	----------

No Fixed Lighting

24

Flow Temperature Value Boiler Interlock	45.00 No	
Flow Temperature	Enter value	
Underfloor Heating	Yes - Pipes in thin screed	
Heat Emitter	Radiators and Underfloor	
Heating Pump Age	2013 or later	
Is MHS Pumped	Pump in heated space	
Fan Assisted Flue	No	
Flue Type	None or Unknown	
FI Case	0.00	
Oil Pump Inside	No	
HETAS approved System	No	
Delayed Start Stat	No	
Controls SAP Code	2207	
System Type	Heat Pump	
Manufacturer	Vaillant Group UK Ltd	
Model Name	aroTHERM plus 7kW + Al	
In Summer	279.37	
In Winter	268.46	
Fuel Type SAP Code	Electricity 0	
Database Ref. No.	104436	
Percentage of Heat	100.00	%
Description	aroTHERM plus 7kW	
4.0 Main Heating 1	Database	

Efficacy 75.00

Power 10

Capacity 750

Count 29



	Heat Source	Fuel Type	e Heating U	se Ef	ficiency	Percentag Heat	e Of He	I	Heat Power Ratio	Electrical	Fuel Facto	r Effici	ency type
Heat source 1 Heat source 2 Heat source 3 Heat source 4 Heat source 5	None None								Katio				
28.0 Water Heatin	ng												
Water Heating				Main He	eating 1								
SAP Code				901									
Flue Gas Heat	Recovery System	1		No									
Waste Water H	leat Recovery Inst	antaneous \$	System 1	No									
Waste Water H	leat Recovery Inst	antaneous S	System 2	No									
Waste Water H	leat Recovery Sto	rage Systen	ı	No									
Solar Panel				No									
Water use <=	125 litres/person/d	ay		Yes									
Summer Imme	ersion			No									
Cold Water Sc	ource			From m	ains								
Bath Count				1									
Supplementar	y Immersion			No									
Immersion On	ly Heating Hot Wat	ter		No									
28.1 Showers													
Description			Shower Type	e			Flow Ra [l/min]		ted Pow [kW]	ver Connec	cted Connect	ed To	
Bathroom 1 Ensuite 1			Combi boiler Combi boiler				8.00 8.00			No No			
28.3 Waste Water	Heat Recovery S	system											
29.0 Hot Water C	ylinder			Hot Wat	er Cylind	der							
Cylinder Stat				Yes									
Cylinder In He	ated Space			Yes									
Independent T	ime Control			Yes									
Insulation Type	e			Measur	ed Loss								
Cylinder Volun				250.00						L			
Loss				1.40						kWh/	/day		
Pipes insulation	n			Fully ins	ulated p	rimary pipew	ork						
In Airing Cupb				No	· ·								
31.0 Thermal Sto	re			None									
34.0 Small-scale	Hydro			None									
Electricity Gen	erated			0.00									
Apportioned				0.00						kWh/	Year		
Connected to	dwelling's electricit	y meter		Yes									
Electricity Gen				Annual									
Jan		Mar	Apr	Мау	Ju	n J	ul	Aug	Se	ep (Oct N	ov	Dec

Recommendations

Lower cost measures

None Further measures to achieve even higher standards None



Property Reference	ł	Plot 9	lss					Issued	on Date	15/12	/2023		
Assessment Reference		Plot 9					Pro	р Туре	Ref	Plot 9	lot 9		
Property	Parker Collins House, Plot 9, Parker Collins House, Ripley, Surrey, GU23 6JA												
SAP Rating				83 B		DER		3.28	3		TER	9.	62
Environmental				97 A		% DEF	< TER						.90
CO₂ Emissions (t/year)				0.54		DFEE		41.6	54		FEE		5.11
Compliance Check				See BR	EL	% DFE	E < TFE					7.	
% DPER < TPER				32.59		DPER		34.1	16		TPER		.67
Assessor Details	Mrs	Manal Bashir									Assessoi	r ID I 7	97-0001
Client													
		A FOR: Nev	v Build (As Desi	gned)								
Prientation				East	<u> </u>								
Property Tenture				1									
ransaction Type				6									
errain Type				Suburba	an								
.0 Property Type					Detached								
Which Floor				O									
.0 Number of Storeys													
-				2									
.0 Date Built				2024									
.0 Property Age Band				L									
.0 Sheltered Sides					1								
.0 Sunlight/Shade					Average or unknown								
6.0 Thermal Mass Parameter				Precise calculation									
Thermal Mass				N/A						k.	J/m²K		
.0 Electricity Tariff				Standar	ď								
Smart electricity meter	fitted			Yes									
Smart gas meter fitted				Yes									
2.0 Measurements												•	04
					Baseme Ground flo 1st Store 2nd Store 3rd Store 4th Store 5th Store 6th Store 7th Store	nt: or: ey: ey: ey: ey: ey: ey: ey:	Loss P 0.00 r 49.20 29.58 25.27 0.00 r 0.00 r 0.00 r 0.00 r	n m m n n n n	r 111	ternal Flor 0.00 m 94.02 r 85.52 r 32.63 r 0.00 m 0.00 m 0.00 m 0.00 m	1 ² 1 ² 1 ² 1 ² 1 ² 1 ² 1 ²	Average	2 Storey Heigi 0.00 m 2.39 m 2.67 m 2.38 m 0.00 m 0.00 m 0.00 m 0.00 m 0.00 m
3.0 Living Area				23.31						m	2		
0.0 External Walls	Turne	0				11.12-1-	Kerrer	0	Na44 4	Chalks -	01-14-	0	
Description External Brick/Block Wall	Type Cavity Wal	Constr	uction wall; plasterb	oard on data	or bottono		Kappa (kJ/m ² K) 110.00		Nett Area (m ²) 160.30	Shelter Res 0.00	Shelter None	Opening 41.47	s Area Calculati Type Enter Gross Ar
Wall to Garage	Cavity Wal	lightwei outside I Cavity	wall, plasterb ight aggregat structure wall; plasterb ight aggregat	e block, filleo oard on dabs	l cavity, any s or battens,	0.19	110.00	23.91	23.91	0.00	None	0.00	Enter Gross Ar
4 Danta 18/-11-			structure										
.1 Party Walls Description	Туре	9	Constru	ction						Kappa	Area	Shelter	Shelter
Party Wall		d Cavity with e Sealing			l on dabs bo cavity or cav		ightweigl	nt	(W/m²K) 0.00	(kJ/m²K) 110.00	(m²) 64.70	Res 0.00	None
		-											
.2 Internal Walls Description			Construct	tion								Kaı (kJ/r	



Description	Туре	Construct	ion	U-Value (W/m²K)	Kappa (kJ/m²K)/	Gross Area(m²)	Nett Area (m²)		Shelter Factor	r Calculation Type	nOpening
Main Roof	External Plane	Plasterboa	rd, insulated at ceiling level	0.10	9.00	85.52	(m ²) 85.52	None	0.00	Enter Gros	s 0.00
Terrace Roof	Roof External Flat	Plasterboa	rd, insulated flat roof	0.13	9.00	5.29	5.29	None	0.00	Area Enter Gros	s 0.00
Bay Roof	Roof External Flat Roof	Plasterboa	rd, insulated flat roof	0.15	9.00	2.51	2.51	None	0.00	Area Enter Gross Area	s 0.00
10.2 Internal Ceilings Description Internal Ceiling 1		Storey owest occup	Construction ied Plasterboard ceiling, d	carpeted chip	board floo	r					a (m²) 5.52
11.0 Heat Loss Floors											
Description	Туре	Storey Index	Construction			-Value //m²K)	Sh	elter Code		helter Kapp actor (kJ/m ²	a Area (m² K)
Ground Floor	Ground Floor - Solid	Lowest occupi	ed Suspended concrete floor, ca	arpeted		0.12		None		0.00 75.0	
11.2 Internal Floors Description		Storey Index	Construction							Kappa (kJ/m²K)	Area (m²
Internal Floor			Plasterboard ceiling, carpete	ed chipboard f	loor					9.00	85.52
12.0 Opening Types	Data Source	Tuno	Claring		Glazin	a Filli		G-value	Eromo	Frame	U Value
Description		Туре	Glazing		Glazin Gap	Τyp	e		Frame Type	Factor	(W/m²K)
Door Windows	Manufacturer BFRC, BSI or	Solid Door Window	Double Low-E So	ft 0.1		Air Fi Air Fi		0.00 0.43	Wood Wood	0.70 1.00	1.00 1.20
Bifold Door	CERTASS data BFRC, BSI or	Window	Double Low-E So	ft 0.1		Air Fi	lled	0.43	Wood	1.00	1.20
Dormer Windows Roof Light	CERTASS data Manufacturer Manufacturer	a Window Roof Light	Double Low-E So Double Low-E So			Air Fi Air Fi		0.63 0.63	Wood Wood	0.70 0.70	1.20 1.20
13.0 Openings											
Name Front Elevation Front Elevation Rear Elevation Side Elevation Side Elevation	Opening Ty Door Windows Bifold Door Windows Windows Windows	pe	Location External Brick/Block Wa External Brick/Block Wa External Brick/Block Wa External Brick/Block Wa External Brick/Block Wa External Brick/Block Wa	all all all all	E E V V S	entation East East West Vest South Jorth		Area (3.80 10.4 16.2 7.29 1.00 2.73	0 20 21 5 6	4	ch)))) 5)
14.0 Conservatory			None								
15.0 Draught Proofing			100					%			
16.0 Draught Lobby			No					j			
17.0 Thermal Bridging 17.1 List of Bridges			Calculate Bridges]			
Bridge Type E1 Steel lintel with perfo E3 Sill E4 Jamb E5 Ground floor (normal E6 Intermediate floor wit E10 Eaves (insulation at E12 Gable (insulation at E14 Flat roof E17 Corner (inverted – i external area)) hin a dwelling ceiling level) ceiling level)	olate	Source Type Independently assessed Gov Approved Scheme Gov Approved Scheme Gov Approved Scheme Gov Approved Scheme Gov Approved Scheme Table K1 - Default Gov Approved Scheme	Length 25.26 15.76 48.86 49.20 29.58 17.09 23.41 4.47 17.29	Psi 0.05 0.02 0.11 0.00 0.07 0.10 0.16 -0.09	0.0 0.0 0.1 0.0 0.0 0.0 0.1 0.1	5 H 2 R 2 R 1 R 0 R 7 R 0 R 6	eference: i Therm CD CD CD CD CD CD CD	:		Imported No No No No No No No No
E16 Corner (normal) E15 Flat roof with parap E24 Eaves (insulation at			Gov Approved Scheme Table K1 - Default Table K1 - Default	37.54 7.89 10.95	0.05 0.30 0.15	0.3	0	CD			No No No
Y-value			0.04					W/m²K			
18.0 Pressure Testing			Yes]			
Designed AP ₅₀			4.00					m³/(h.m	²) @ 50 I	Pa	
Property Tested?			Yes]			
Test Method			Blower Door]			
19.0 Mechanical Ventilatio	n										
Mechanical Ventilation	I							1			
Mechanical Ventila	tion System Pres	ent	Yes								
Approved Installati	on		No								
								1			



Count 35

Τv	Туре			ct ventilation - decentr	alised	_			
	' V Reference Number	500787							
Du	uct Type	Rigid			\exists				
	VHR Efficiency		0.00			\exists			
	et Rooms		5			=			
SF	SFP from Installer Commissioning Certificate					\exists			
19.1 Mecha	nical extract ventilation - Dece	ntralised							
SFP 0.13 0.11 0.00 0.00 0.10 0.10	Fan/Room Type In Room Fan Kitchen In Room Fan Other Wet Room In Duct Fan Kitchen In Duct Fan Other Wet Room Through Wall Fan Kitchen Through Wall Fan Other Wet Room								
20.0 Fans,	Open Fireplaces, Flues								
21.0 Fixed	Cooling System		No						
22.0 Lightir	ng								
No Fixe	d Lighting		No						
			Name Lighting	Efficacy 75.00	Power 10	Capacity 750			
24.0 Main F	leating 1		Database						
Description		aroTHERM plus							
Percentage of Heat		100.00			%				
Database Ref. No. Fuel Type SAP Code		104983							
		Electricity							
		0							
In	In Winter		322.97						
In	In Summer		186.49	186.49					
Model Name			aroTHERM plus						

6.0 Heat Networks	None	
5.0 Main Heating 2	None]
Boiler Interlock	No]
Flow Temperature Value	45.00	
Flow Temperature	Enter value	_
Underfloor Heating	Yes - Pipes in thin screed	
Heat Emitter	Radiators and Underfloor]
Heating Pump Age	2013 or later]
Is MHS Pumped	Pump in heated space]
Fan Assisted Flue	No]
Flue Type	None or Unknown]
FI Case	0.00	
Oil Pump Inside	No	
HETAS approved System	No	
Delayed Start Stat	No	
Controls SAP Code	2207	
System Type	Heat Pump	
Manufacturer	Vaillant Group UK Ltd]
Model Name	aroTHERM plus 10kW + Al	
In Summer	186.49	
In Winter	322.97]
SAP Code	0	
Fuel Type	Electricity	
Database Ref. No.	104983]



Heat Source

Fuel Type Heating Use

ing Use Efficiend

Efficiency Percentage Of Heat Heat Heat Power Ratio Electrical Fuel Factor

Efficiency type

Heat source 1 Heat source 2	None None
Heat source 3	None
Heat source 4	None
Heat source 5	None

28.0 Water Heating

Water Heating	Main Heating 1
SAP Code	901
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery Instantaneous System 1	No
Waste Water Heat Recovery Instantaneous System 2	No
Waste Water Heat Recovery Storage System	No
Solar Panel	No
Water use <= 125 litres/person/day	Yes
Summer Immersion	No
Cold Water Source	From mains
Bath Count	1
Supplementary Immersion	No
Immersion Only Heating Hot Water	No

28.1 Showers							
Description	Shower Type	Flow Rate [I/min]	Rated Power [kW]	Connected	Connected To		
Bathroom 1	Combi boiler or unvented hot water system	8.00		No			
Ensuite 1	Combi boiler or unvented hot water system	8.00		No			
Ensuite 2	Combi boiler or unvented hot water system	8.00		No			

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Hot Water Cylinder			
Cylinder Stat	Yes			
Cylinder In Heated Space	Yes			
Independent Time Control	Yes			
Insulation Type	Measured Loss			
Cylinder Volume	300.00	L		
Loss	1.60	kWh/day		
Pipes insulation	Fully insulated primary pipework			
In Airing Cupboard	No			
31.0 Thermal Store	None			
34.0 Small-scale Hydro	None			
Electricity Generated	0.00			
Apportioned	0.00	kWh/Year		
Connected to dwelling's electricity meter	Yes			
Electricity Generation	Annual			
Jan Feb Mar Apr	May Jun Jul Aug Sep	Oct Nov Dec		

Recommendations Lower cost measures

None

Further measures to achieve even higher standards

None