



Energy Statement

Energy and Carbon Reduction

Land at Rectory Farm (North), Yatton, North Somerset

Reference Number: 008517

Date: March 2023

Issue: Initial

thefesgroup.com



PLANNING



DESIGN



ON-CONSTRUCTION



EXISTING BUILDINGS

Project name: Land at Rectory Farm (North), Yatton, North Somerset

Ref: 008517

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Origination Date: March 2023

Reviser: N/A

Date of last revision: N/A

Issue Number: Initial

Author:

Initial review by:

Secondary review by:



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Summary of changes:

N/A

Contents

Section	Page
Company Profile	4
Introduction	5
Sustainable Design	6
Material Selection	6
Flood Risk	7
Pollution during construction	7
Health & Wellbeing	7
Water Efficiency	8
Renewable Technologies	10
Solar Thermal	10
Photovoltaic Panels	11
Air Source Heat Pump	11
CHP & Wind Power	12
Energy Strategy	13
The Context	13
Proposed Strategy	14
Establishing a Baseline	15
Fabric and Building Services Specification	16
Reduced Emission Rate & Energy Requirement	17
Evaluation	18
Appendix A	19

Company Profile

Established in 2007 as a family firm, we set out to create a sustainable, resilient business, establishing a happy and positive working environment for both clients and colleagues. It was important for us to offer adaptable and growing solutions for the areas of the construction industry that would benefit from them the most.

Creating an environment that was a pleasure to work in for both colleagues and clients was, and remains, incredibly important to us. Building our future on the foundations of honest relationships, flexibility and efficiency means that we value every client's success as though it were our own.

We have grown to become a trusted construction compliance partner. We continue to grow, to offer packages of sustainability, environmental and acoustic services, with the long-term aim of making our clients' lives easier, so they can focus on the jobs that they enjoy.

Today, the business works with a wide spectrum of clients from household name plc firms, one-off builds and everything in between. Our client list includes many of the nation's major house builders and contractors, as well as universities and public sector organisations. The team also lends their know-how to many architectural practices, M&E consultants and planners.

Introduction

This report has been prepared by the FES Group on behalf of Persimmon Homes Severn Valley to accompany the planning application for the proposed development known as Land at Rectory Farm (North), Yatton, North Somerset.

The development proposals will see the construction of 190 new dwellings, consisting of detached, semi-detached, terraced dwellings and apartments].

This report reviews the proposed energy and carbon reduction strategy advanced by Persimmon Homes Severn Valley within the context of local and national planning policy. The report in particular considers and evaluates the measures incorporated into the design of the development to reduce the predicted CO₂ consumption of the site over 2021 Building Regulations under SAP10.

The following documents were considered when formulating the report:

- National Planning Policy Framework 2021 – The NPPF strengthens the emphasis on sustainable development and encourages Local Authorities to adopt standards consistent with the Government's zero carbon building policy and other nationally described standards.
- Building Regulations Part L 2021 – Approved Document L 2021 Conservation of Fuel and Power in new dwellings sets minimum energy efficiency and fabric efficiency standards for all new domestic buildings.

Sustainable Design

The building fabric, the building services and the management of a building broadly determine the energy use of a building. In understanding this, design teams can take measures to advance sustainable design from the earliest stages of a development. However sustainability is not limited to issues concerning energy consumption. Material selection, the protection of local environments, addressing flood risk and the health and wellbeing of future occupants are all issues requiring consideration. Addressing all these issues in an integrated and intelligent manner will result in truly sustainable developments.

Material Selection

Significant amounts of energy and natural resources are consumed in the production, transportation and disposal of building materials. Two issues are of significant importance in the procurement of materials: the environmental impact of materials and the sourcing of materials. Persimmon Homes Severn Valley is dedicated to taking pro-active measures to addressing these issues.

The developer will choose materials which have a lesser environmental impact. This will be implemented during the procurement process. Suppliers will be obliged to produce Environmental Management System certificates covering the sourcing and production of materials. Timber or timber composite products will be sourced from responsible sources. Suppliers will be obliged to provide full Chain of Custody Certificates right through the supply chain; from the initial timber yard, manufacturing process, transformation and distribution. Secure certificates must be produced by valid accrediting bodies – FSC, PEFC, CSA, SFI & MTCC.

	BRE Green Guide Rating
External Wall	A+
Ground Floor	B
Intermediate Floor	C
Roof	A+
Internal Walls	A
Windows	A

Table 1- Green Guide Rating of Specification

Flood Risk

The Flood and Water Management Act 2010, directs developers to avoid, reduce and delay the discharge of rainfall to public sewers and watercourses through the use of Sustainable Urban Drainage Systems (SUDS) with the aim of protecting watercourses and reducing the risk of localised flooding and pollution.

This obligation is taken seriously:

Where possible, impermeable surfaces are kept to a minimum, thus allowing for maximum infiltration (e.g. permeable paving)



Pollution during Construction

The contractor will be required, under the terms of their contract, to minimise dust, fumes, discharges and any other form of pollution on site, in line with best practice policies:

- The Control of Dust and Emissions from Construction & Demolition: Best Practice Guidance.

The sustainable management and monitoring of waste generated during the construction of a development is a major concern to local and national planners.

Furthermore the site will allow the successful segregation of waste on site in line with Best Practice policies. However the contractor will be obliged to adopt many of the principles of the waste hierarchy:

- Accurate specifications of materials and volumes.
- Recycling and re-use of waste on site.
- Arrange take back schemes with suppliers.
- Instruct a licensed waste contractor to segregate site waste for recycling.



Health and Wellbeing

In achieving ever stricter levels of energy efficiency, it is important that designers do not lose sight of the fact that they are building homes that people can live in and not just occupy. This is an integral part of sustainability, and a hugely important consideration if the population (and the market place) is to tolerate the sustainability agenda. While it is quite difficult to measure or even quantify health and wellbeing, the following measures are a sample of the efforts made by Persimmon Homes Severn Valley to address this issue: The proposed properties will have sufficient living /dining space. While this is obviously a marketing consideration, it does fall within this category.

The principal living rooms have sufficient glazing to allow natural light to penetrate into the rooms. Numerous studies have shown this to be beneficial to the general health and happiness of occupants. Daylighting calculations can be undertaken to demonstrate that living rooms, dining rooms, kitchen and home offices receive adequate daylighting.

- The property will benefit from a garden or private space for recreation however, this may not apply to flats. This will take the form of secure rear gardens to each property.
- The property has dedicated internal recycling facilities and accessible external storage in line with the local council waste and recycling collection scheme.

Water Efficiency

The average person consumes some 150 litres per day; this represents an annual increase of 1% since the 1930s. Despite the United Kingdom's wet and temperate climate, climate change will most probably result in an increase in the occurrence of drought orders and hosepipe bans. With this in mind, it is not difficult to appreciate that within the next few decades the UK (particularly the South East) will face regular water shortages.

In response to this water efficiency has gained equal billing, alongside energy efficiency. The following are the principle policy drivers.

- The Approved Document G (2015) restricts new build dwellings to a maximum consumption of 125 litres per person per day. The Water Efficiency Calculator of New Dwellings also includes an allowance for external water use.
- The Code for Sustainable Homes was first introduced in April 2007. While now disbanded, Included within the Code was mandatory water efficiency standards. Homes constructed to Code for Sustainable Homes Level 3 and 4 must achieve a maximum internal water consumption of 105 litres per person per day. Dwellings constructed to Code Levels 5 and 6 must achieve an internal water consumption of 80 litres per person per day.

- Part L 2021 and SAP10 will take account of Part G and water consumption in the calculation of the forecasted energy demand of a dwelling.



The below table details the recommended sanitary ware fittings to be adopted by Persimmon Homes Severn Valley to meet with the requirement to achieve 125 Litres per person per day as required by Building Regulations Part G 2015.

Installation Type	Unit of Measurement	Capacity/Flow Rate	Use Factor	Fixed Use	Litres Per Person Per Day
WC (Dual Flush)	Full Flush (litres)	4	1.46	0.00	5.84
	Part Flush (litres)	2.6	2.96	0.00	7.70
Taps (excluding kitchen tap)	Flow rate (litres/minute)	6	1.58	1.58	11.06
Baths (where shower present)	Capacity to overflow (litres)	180	0.11	0.00	19.80
Showers (where bath present)	Flow rate (litres/minute)	9	4.37	0.00	39.33
Kitchen sink tap	Flow rate (litres/minute)	6	0.44	10.36	13.00
Washing Machine	Litres/kg dry load	8.17	2.1	0.00	17.16
Dishwasher	Litres/place setting	1.25	3.60	0.00	4.50
Total					118.39

Contribution from Greywater (litres/person/day)	0
Contribution from Rainwater (litres/person/day)	0
Total Internal Water Consumption	118.39
Normalisation Factor	0.91
Water Consumption with Normalisation Factor	107.73
External Use	5.00
Part G Water Consumption	112.73

Table 2 – Water Consumption

Renewable Technologies

There are a number of recognised renewable technologies which have the potential to reduce the energy consumption of a dwelling. However given the nature of the development, we judge that the following technologies are worthy of consideration;

- Solar thermal panels.
- Biomass
- Photovoltaic panels.
- Air source heat pumps.
- Combined Heat & Power
- Wind Power

Solar Thermal

Solar thermal panels use radiant solar energy to heat water for domestic consumption. The system works successfully across the UK as they can work in diffuse weather conditions. In comparison to other technologies it is considered a reliable and proven technology. The system works most efficiently when the panel or evacuated tube is mounted on a 10-60° pitch facing due south, though other combinations do work successfully. During late spring to early autumn months, the system can be expected to meet some 70-90% of a dwellings domestic hot water needs.

Most systems in the UK are two panel systems, typically 4 sq m in size and accompanied with a 180-250 litre cylinder with a dedicated solar storage capacity of 65-110 litres. The typical installation costs for solar thermal vary, especially when large volumes are considered. However a rough estimate is £3500 per plot.

Occupants can expect annual savings in the region of £50-85 per year, which is relatively modest. Solar thermal panels do not qualify for feed in tariffs, however it is expected that solar thermal systems will benefit from the Renewable Heat Incentive. A 20-25 year payback can be expected, dependent on usage and dwelling type.

Taking into consideration the proposed development, the site layout and orientation a two panel systems is recommended for consideration.



Biomass

Biomass boilers offer an environmentally sound, heating solution. Heating is generated by burning biomass, such as wood pellets or logs. This will emit the same amount of CO₂ as is absorbed while the plants were growing, therefore, the biomass is classed as carbon neutral.

Unfortunately, such a provision for this development is both unfeasible and out of proportion to the requirement.



Photovoltaic

Photovoltaic panels convert sunlight into electricity for use within a dwelling. PV panels use cells to convert light into electricity. A PV cell usually consists of 1 or 2 layers of a semi-conducting material such as silicon. The greater the intensity of sunlight, the more electricity is generated. PV systems can come in different forms. The most aesthetically pleasing are PV tiles which resemble roof tiles. However the most popular are modules which can either sit on the roof or be integrated into it. The technology is most efficient when oriented due south. However panels orientated south of east or west are suitable. Generally panels orientated away from due south require a greater surface area to generate a set amount of energy.

PV is a viable option and if installed on a select number of plots across a development, this would be the most cost effective solution to a site wide CO2 reduction. As a result we would recommend this technology for consideration.



Air Source Heat Pumps

Air source heat pumps extract heat from the outside air. The heat is absorbed into a fluid, which is pumped through a heat exchanger. Low grade heat is then extracted by the refrigeration system and after passing through the compressor is concentrated into a higher temperature. This energy is then used to heat water for space and hot water use within the dwelling. While heat pumps use national grid electricity, and so are not a renewable resource, they utilise a heat source which is naturally renewed in our environment and so are considered a low carbon technology.

Heat pumps have stated CoPs in the region of 2-4, though test results outside of the laboratory have produced mixed results. Typically the heat pump is located on an external wall. It is generally accepted that 1kW in heat pump size will provide enough heating for 20m² of floor space.

Persimmon Homes Severn Valley have confirmed that all dwelling on site will be installed with ASHPs.



Combined Heat and Power (CHP)

Combined heat and power utilises the waste energy in the generation of electricity to provide space heating and hot water to a development. In conventional means of power generation copious amounts of energy is wasted in the form of heat. The utilisation of this waste heat can see efficiencies of CHP systems typically exceed 90%.

Combined heat and power is not a renewable technology but instead is a DECC recognised low carbon technology which qualified for the Low Carbon Building Programme. To qualify as a renewable technology the use of biomass pellet or bio-diesel would be required. At the present time biomass CHP is very much in its infancy in the UK. Furthermore it is imagined there will be significant problems in locating a sustainable and local source of pellet. Without such a source the reliability of such a system and the net carbon benefit of pellet sourced from a distance are questionable. As a result we do not recommend CHP for consideration on this development.



Wind Power

The principle of harnessing wind power is well established in the UK with access to over 40% of the total European wind resource. Until recently, developments have been concentrated within coastal regions; however technological advances mean that wind power is viable in many urban locations.

Wind turbines are a means of capturing the power within a moving air mass (wind) and converting it into electricity. As yet there is no simple and practical method of incorporating wind generated electricity to sites containing a number of buildings, or requiring high energy usage.

Furthermore, the urban location also means that it would prove difficult to harness sufficient wind energy to meet the needs of the development. The high density of urban areas obstructs air patterns and reduces the efficiency of the turbine. The size of the turbine required is also likely to detract unacceptably from the local area and generate a significant amount of noise, both of which prejudice local residential amenity.

For these reasons, together with the high installation costs, potential noise pollution and high likelihood of not achieving planning approval we are not proposing to employ wind turbines on this site.



Energy Strategy

The Context

The proposed works fall under the scope of Approved Document L 2021. The Approved Document sets minimum fabric energy efficiency standards and a maximum CO2 emission rate for residential buildings. To place the proposed energy strategy into its correct regulatory context it is worthwhile summarising the minimum standards included in the Approved Document.

Element	Part L 2021 Minimum Standard
External Walls	0.26W/m2K
Roof	0.16W/m2K
Floor	0.18W/m2K
Glazing & Doors	1.80W/m2K
Air Test	8.00m3/h.m2 at 50Pa

Table 3 – Minimum Fabric Efficiency Standards

Proposed Strategy

The National Planning Policy Framework requires that all development proposals are in line with the Government's zero carbon buildings programme.

The figures and calculations detailed in this report have been taken from SAP10 (2021 Building Regulations).

In response to this guidance, and recent shifts within the industry, Persimmon Homes Severn Valley proposes the adoption of a fabric first energy strategy which addresses the core policy goals of sustainable construction:-

- Reduced CO2 emissions to combat the causes of climate change.
- Reduced energy consumption to address legitimate concerns of energy security.

By reducing the energy requirement of the building, the sustainable credentials of each development are enhanced and are not validated by simply bolting on expensive renewable equipment. By focusing on fabric performance and the provision of efficient heating systems each dwelling is intrinsically "green".

Before the potential of various technologies can be assessed, it is first necessary to calculate the base line energy consumption of the development and hence the target reduction.

The proposed dwellings were modelled in SAP10 to determine the energy consumption and corresponding CO2 emissions of the development. Standard Assessment Procedure, or SAP, is the Government's approved methodology for the calculation of energy consumption and CO2 emissions for new build dwellings.

In line with best practice the proposed energy strategy for Land at Rectory Farm (North), Yatton, North Somerset will adhere to the principles of the Energy Hierarchy;

- Be Lean – reduce the need for energy.
- Be Clean – supply and use energy in the most efficient manner.
- Be Green – supply energy from renewable sources.

Adhering to the principles of the Energy Hierarchy has a number of benefits. The principle benefits are;

- By reducing the energy requirement of each dwelling the renewable requirement shrinks in proportion. This has obvious cost benefits.
- The sustainable credentials of each development are enhanced and are not validated by simply bolting on expensive renewable equipment. By focusing on the fabric performance and the provision of efficient heating systems each dwelling is intrinsically “green”.

Be Lean.

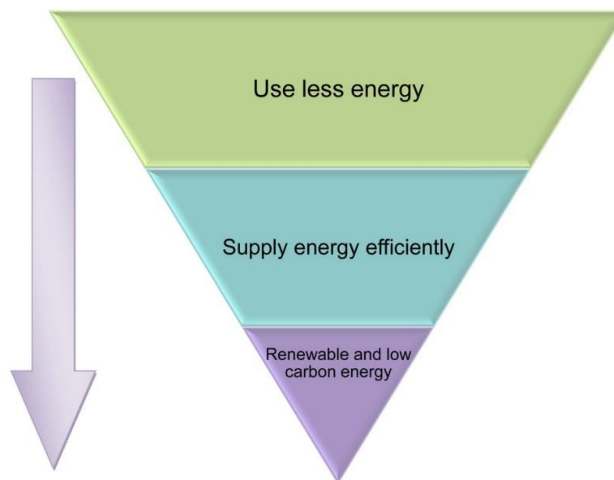
Persimmon Homes Severn Valley have confirmed Lean measures equal to a 2.86% reduction in fabric heat loss across the building envelope. This greatly reduces the need for energy within a dwelling.

Be Clean.

Persimmon Homes Severn Valley have confirmed Clean measures which include temperature & zone controls to allow the user to maximise the control to ensure efficient use of the main heating system. 100% Low Energy Lighting to be installed alongside dMEV.

Be Green.

Persimmon Homes Severn Valley have confirmed Green measures where air source heat pumps and EV charging points will be installed on every dwelling.



Establishing a Baseline

To adequately ascertain the potential of Persimmon Homes Severn Valley preferred strategy, a baseline energy consumption associated with the development must be calculated. As such the development was modelled in SAP10 to determine the current CO² emission and associated energy requirement prior to the incorporation of improved fabric efficiencies and renewable technologies. The table below summarises the results calculated.

House Type	No	Baseline Emission Rate (kg/year)	Baseline Energy Rate (kWh/year)
HT - Arden - Semi	24	17,449.17	91,891.73
HT - Ashdown - Semi	12	12,942.82	67,760.88
HT - Danbury - Semi	16	13,864.03	72,484.00
Ht - Delamare - Det	5	5,298.35	27,755.18
HT - Saunton - Semi	14	14,729.57	77,103.42
HT - Sherwood - Det	8	7,977.22	41,639.94
HT - Charnwood - Det	10	10,235.32	53,377.16
HT - Burnham - Det	5	5,968.59	31,244.61
HT - Whinfell - Semi	14	15,535.47	81,086.42
HT - Whiteleaf - Det	4	4,597.19	23,994.74
HT - Thetford - GF	14	11,094.68	58,176.06
HT - Thetford - MF	14	10,070.10	52,609.32
HT - Thetford - TF	14	10,691.05	55,957.03
HT - 2A - Semi	16	14,310.00	75,022.56
HT - 2A - Mid	8	6,436.32	33,650.76
HT - 4A - Semi	12	13,179.43	68,909.60
Total	190	<u>174,379.30</u>	<u>912,663.41</u>

Table 4 – Baseline Energy Consumption & CO²

The calculations summarised in the table above confirm Land at Rectory Farm (North), Yatton, North Somerset has a baseline site wide energy requirement of 912,663.41kWh/year and an associated CO₂ emission rate of 174,379.30kgCO₂/year.

Fabric and Building Services Specification

Persimmon Homes Severn Valley proposes a series of fabric and building service enhancements that exceeds the minimum requirements of Part L 2021. By placing a significant emphasis on the performance of the fabric of each property, reductions in energy and carbon will be achieved. The following table details the anticipated fabric efficiency and building services standards to be incorporated into the design. These measures constitute the lean efforts.

Element	Part L 2021	Enhanced Specification
Wall	0.26W/m ² K	
Roof	0.16W/m ² K	0.09/0.15W/m ² K
Floor	0.18W/m ² K	0.11-0.12W/m ² K
Glazing & Doors	1.80W/m ² K	1.10-1.30W/m ² K
Air Test	4.50m ³ /h.m ² at 50Pa	4.50m ³ /h.m ² at 50Pa

Table 5 – Enhanced Specification Summary & Comparison

The U-values above show that the minimum requirements of Part L have been exceeded.

In addition to the summary above the following additional measures will be incorporated into the design, constituting the **clean** measures to reduce energy consumption;

- Persimmon Homes Severn Valley have adopted a set of bespoke thermal bridging details which is being implemented on the site. These reduce thermal bridging throughout junctions and penetrations through the building fabric.
- Efficient independent heating systems will be provided with time and temperature zone control. These will allow the eventual occupants to exercise control over their heating system and thus reduce energy consumption.
- Energy efficient lamps will be installed in each light fitting

- Water consumption is now included in the calculation of a property's energy consumption. Thus each property will adhere to the requirements of Approved Document G– maximum internal water consumption of 125 litres per person per day.

It is clear that the proposed strategy places a great importance on the efficiency of a buildings thermal envelope and internal building services. This emphasis is to be encouraged. It recognises that it is inherently more sustainable to invest resources in reducing a property's long term energy consumption in contrast to short term generation benefits.

Reduced Emission Rate & Energy Requirement

To determine the benefits of the proposed specification, the development was again modelled in SAP10. The table below summarises the results calculated.

House Type	No	Enhanced Emission Rate (kg/year)	Enhanced Energy Rate (kWh/year)
HT - Arden - Semi	24	7,590.27	80,295.15
HT - Ashdown - Semi	12	5,649.74	59,412.23
HT - Danbury - Semi	16	6,303.99	66,499.96
Ht - Delamare - Det	5	2,504.26	26,301.53
HT - Saunton - Semi	14	6,564.26	69,151.59
HT - Sherwood - Det	8	3,769.38	39,673.92
HT - Charnwood - Det	10	4,881.89	51,315.30
HT - Burnham - Det	5	2,624.96	27,564.58
HT - Whinfell - Det	14	6,973.84	73,287.55
HT - Whiteleaf - Det	4	2,054.45	21,604.02
HT - Thetford - GF	14	4,949.14	52,245.70
HT - Thetford - MF	14	4,868.57	51,538.42
HT - Thetford - TF	14	5,030.55	53,176.27
HT - 2A - Semi	16	6,690.72	70,621.44
HT - 2A - Mid	8	3,033.72	32,143.44
HT - 4A - Semi	12	5,729.02	60,396.76
Total	190	<u>79,218.75</u>	<u>835,227.85</u>

Table 6 – Reduced Emission Rate & Energy Requirement

The calculations summarised in the table above confirm Land at Rectory Farm (North), Yatton, North Somerset has a reduced energy requirement of 835,227.85kWh/year and an associated emission rate of 79,218.75kgCO₂/year. These are respectively 8.48% and 54.57% reductions over the baseline calculated previously.

In order to comply with the planning requirements, it is necessary for this development to show measures have been taken to ensure high energy efficiency and best practice with regards to energy consumption inline with the Energy Hierarchy.

Evaluation

The FES Group was instructed by Persimmon Homes Severn Valley to review the performance of the proposed Energy Strategy for the development at Land at Rectory Farm (North), Yatton, North Somerset. The energy strategy was detailed previously but can be best summarised as follows;

- Persimmon Homes Severn Valley proposes an energy strategy, which addresses the two policy concerns of sustainable design and construction: climate change and energy security.
- Persimmon Homes Severn Valley has proposed a fabric first strategy, which aims to achieve long term reductions in CO2 emissions and climate change.
- The proposed fabric and building services specification will permanently reduce regulated emissions by 54.57% and the proposed energy demand by 8.48% This is a significant betterment and demonstrates that the proposed development will have a reduced reliance on national resources (gas and electricity).
- The total number of dwelling for each housetype has been calculated on a pro rata basis as the site plan has not been finalised. Once this has been completed, the report will require revising.

After detailed analysis we can conclude that the preferred energy strategy adheres to the principles and aspirations of sustainable design and construction as advanced by national and local government and the house building industry. We therefore recommend the adoption of the preferred energy strategy by Persimmon Homes Severn Valley

Future Energy Surveys Ltd T/A The FES Group and its staff shall not to be held liable for any damage or loss sustained as a result of using of the information provided in this report. The report is based on drawings and information provided by the client and/or project design team at the time of issue. The information and the drawings provided to us determine the results within the report. If anything changes during the course of the ongoing design or construction, the reduction and calculations will be incorrect. The FES Group will not be held responsible for the implications of such change.

As such this report should be viewed as providing a reasonable assessment of the predicted performance of the development based on current knowledge.

Appendix A

Summary for Input Data



Property Reference	008335 - HT - Thetford - GF		Issued on Date	16/03/2023
Assessment Reference	As Designed	Prop Type Ref	HT - Thetford - GF	
Property	Plot 002, Emerson's Green Parcel 30			

SAP Rating	79 C	DER	5.75	TER	12.89
Environmental	96 A	% DER < TER			55.39
CO ₂ Emissions (t/year)	0.34	DFEE	35.16	TFEE	37.07
Compliance Check	See BREL	% DFEE < TFEE			5.17
% DPER < TPER	10.19	DPER	60.70	TPER	67.59

Assessor Details	Mr. Benjamin Wood	Assessor ID	P717-0001
Client	Persimmon Homes Severn Valley , null		

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	West
Property Tenure	ND
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	Flat, Semi-Detached
Position of Flat	Ground-floor flat
Which Floor	0
2.0 Number of Storeys	1
3.0 Date Built	2022
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation
7.0 Electricity Tariff	Standard
Smart electricity meter fitted	No
Smart gas meter fitted	No

7.0 Measurements	Ground floor:	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
		31.36 m	61.48 m ²	2.36 m

8.0 Living Area	25.57	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	55.38	46.56	0.00	None	8.82	Enter Gross Area
	Wall to Corridor	Timber Frame	Timber framed wall (two layers of plasterboard)	0.26	18.00	18.57	16.62	0.43	Stairwell Access Corridor 3	1.95	Enter Gross Area

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Ground Floor	Plasterboard on timber frame	9.00	115.73

10.1 Party Ceilings	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Party Ceiling	Timber I-joists, carpeted	20.00	61.48

11.0 Heat Loss Floors	Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
	Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	61.48

12.0 Opening Types	Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
	Solid Doors	Manufacturer	Solid Door							1.10
	Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
	Patio Doors	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30

Summary for Input Data



13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Door	Solid Doors	Wall to Corridor	West	1.95	
Rear/LH Windows	Windows	External Wall	North East	1.10	
RH Windows	Windows	External Wall	South	1.10	
Front/LH Windows	Windows	External Wall	North West	2.28	
Rear/RH Patio Doors	Patio Doors	External Wall	South East	3.15	
Rear/RH Windows	Windows	External Wall	South East	1.19	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	7.36	0.08	0.08	No
E3 Sill	Independently assessed	4.92	0.03	0.03	No
E4 Jamb	Independently assessed	19.80	0.02	0.02	No
E5 Ground floor (normal)	Independently assessed	31.36	0.09	0.09	No
E21 Exposed floor (inverted)	Independently assessed	1.89	-0.01	-0.01	Half DEFAULT
E7 Party floor between dwellings (in blocks of flats)	Non Gov Approved Schemes	29.47	0.08	0.08	No
E16 Corner (normal)	Independently assessed	11.79	0.05	0.05	No
E17 Corner (inverted – internal area greater than external area)	Independently assessed	2.36	-0.04	-0.04	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

Approved Installation

Mechanical Ventilation data Type

Type

MV Reference Number

Duct Type

Wet Rooms

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

22.0 Lighting

No Fixed Lighting

Name	Efficacy	Power	Capacity	Count
Downlights	80.00	28	2240	5
Spotlights	90.00	9	810	3

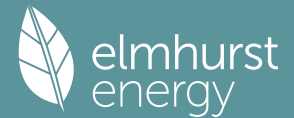
24.0 Main Heating 1

Percentage of Heat %

Database Ref. No.

Fuel Type

Summary for Input Data



In Winter	0.00
In Summer	0.00
Model Name	Ecodan 5.0 kW
Manufacturer	Mitsubishi Electric Europe B.V.
System Type	Heat Pump
Controls SAP Code	2207
PCDF Controls	0
Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators
Flow Temperature	Enter value
Flow Temperature Value	55.00

25.0 Main Heating 2

26.0 Heat Networks

Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1									
Heat source 2									
Heat source 3									
Heat source 4									
Heat source 5									

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
Cold Water Source	From mains
Bath Count	1
Immersion Only Heating Hot Water	Yes

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
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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	150.00	L
Loss	1.23	kWh/day
In Airing Cupboard	No	

31.0 Thermal Store

Recommendations

Lower cost measures
None

Further measures to achieve even higher standards

Ratings after improvement

Typical Cost Typical savings per year

Summary for Input Data



typical cost

typical savings per year

SAP rating

Environmental Impact

0
0
0

0
0
0

Summary for Input Data



Property Reference	008335 - HT - Thetford - MF		Issued on Date	16/03/2023
Assessment Reference	As Designed.	Prop Type Ref	HT - Thetford - 1F	
Property	Plot 004, Emerson's Green Parcel 30			

SAP Rating	79 C	DER	5.41	TER	11.19
Environmental	96 A	% DER < TER			51.65
CO ₂ Emissions (t/year)	0.33	DFEE	30.88	TFEE	30.00
Compliance Check	See BREL	% DFEE < TFEE			-2.91
% DPER < TPER	2.03	DPER	57.27	TPER	58.46

Assessor Details	Mr. Benjamin Wood	Assessor ID	P717-0001
Client	Persimmon Homes Severn Valley , null		

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	West
Property Tenure	ND
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	Flat, Semi-Detached
Position of Flat	Mid-floor flat
Which Floor	1
2.0 Number of Storeys	1
3.0 Date Built	2022
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation
7.0 Electricity Tariff	Standard
Smart electricity meter fitted	No
Smart gas meter fitted	No

7.0 Measurements		Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	Ground floor:	32.43 m	64.28 m ²	2.36 m

8.0 Living Area	25.57	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	58.87	49.45	0.00	None	9.42	Enter Gross Area
	Wall to Corridor	Timber Frame	Timber framed wall (one layer of plasterboard)	0.26	9.00	17.59	15.64	0.40	Stairwell Access Corridor 4	1.95	Enter Gross Area

9.1 Party Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
	Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	4.46		None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Ground Floor	Plasterboard on timber frame	9.00	121.68

10.1 Party Ceilings	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Party Ceiling	Timber I-joists, carpeted	20.00	64.28

11.0 Heat Loss Floors	Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
	Exposed Floor	Exposed Floor - Solid	Lowest occupied	Other	0.15	None	0.00	40.00	2.80

11.1 Party Floors

Summary for Input Data



Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
Party Floor	Lowest occupied	Timber I-joists, carpeted	20.00	61.48

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Solid Doors	Manufacturer	Solid Door							1.10
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Patio Doors	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Door	Solid Doors	Wall to Corridor	West	1.95	
Rear/LH Windows	Windows	External Wall	North East	1.10	
RH Windows	Windows	External Wall	South	1.10	
LH Windows	Windows	External Wall	North	0.60	
Rear/RH Patio Doors	Patio Doors	External Wall	South East	3.15	
Rear/RH Windows	Windows	External Wall	South East	1.19	
Front/LH Windows	Windows	External Wall	North West	2.28	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	7.93	0.08	0.08	No
E3 Sill	Independently assessed	5.50	0.03	0.03	No
E4 Jamb	Independently assessed	21.90	0.02	0.02	No
E20 Exposed floor (normal)	Independently assessed	2.95	0.08	0.08	No
E21 Exposed floor (inverted)	Independently assessed	1.89	-0.01	-0.01	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	61.90	0.08	0.08	No
E16 Corner (normal)	Independently assessed	9.43	0.05	0.05	No
E17 Corner (inverted – internal area greater than external area)	Independently assessed	4.72	-0.04	-0.04	No
E18 Party wall between dwellings	Independently assessed	4.72	-0.00	-0.00	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	1.89	0.00	0.00	No
P7 Party Wall - Exposed floor (normal)	Table K1 - Default	1.89	0.48	0.48	No

Y-value	<input type="text" value="0.09"/>	W/m ² K
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18.0 Pressure Testing

Designed AP ₅₀	<input type="text" value="4.50"/>	m ³ /(h.m ²) @ 50 Pa
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Test Method	<input type="text" value="Blower Door"/>
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19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	<input type="text" value="Yes"/>
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Approved Installation	<input type="text" value="No"/>
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Mechanical Ventilation data Type	<input type="text" value="Database"/>
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Type	<input type="text" value="Mechanical extract ventilation - decentralised"/>
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MV Reference Number	<input type="text" value="500787"/>
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Duct Type	<input type="text" value="Flexible"/>
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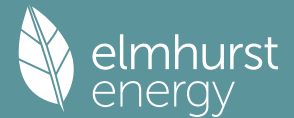
Wet Rooms	<input type="text" value="2"/>
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19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Summary for Input Data



21.0 Fixed Cooling System

No

22.0 Lighting

No Fixed Lighting

No

Name	Efficacy	Power	Capacity	Count
Downlights	80.00	28	2240	5
Spotlights	90.00	9	810	4

24.0 Main Heating 1

Database

Percentage of Heat

100.00

%

Database Ref. No.

104568

Fuel Type

Electricity

In Winter

0.00

In Summer

0.00

Model Name

Ecodan 5.0 kW

Manufacturer

Mitsubishi Electric Europe B.V.

System Type

Heat Pump

Controls SAP Code

2207

PCDF Controls

0

Is MHS Pumped

Pump in heated space

Heating Pump Age

2013 or later

Heat Emitter

Radiators

Flow Temperature

Enter value

Flow Temperature Value

55.00

25.0 Main Heating 2

None

26.0 Heat Networks

None

Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1									
Heat source 2									
Heat source 3									
Heat source 4									
Heat source 5									

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

Cold Water Source

From mains

Bath Count

1

Immersion Only Heating Hot Water

Yes

28.1 Showers

Description

Shower Type

Flow Rate [l/min]

Rated Power [kW]

Connected

Connected To

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Hot Water Cylinder

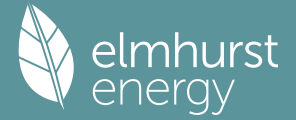
Cylinder Stat

Yes

Cylinder In Heated Space

Yes

Summary for Input Data



Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	150.00	L
Loss	1.23	kWh/day
In Airing Cupboard	No	

31.0 Thermal Store

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
			0	0
			0	0
			0	0

Summary for Input Data



Property Reference	008335 - HT - Thetford - TF		Issued on Date	16/03/2023
Assessment Reference	As Designed.	Prop Type Ref	HT - Thetford - 2F	
Property	Plot 006, Emerson's Green Parcel 30			

SAP Rating	79 C	DER	5.59	TER	11.88
Environmental	96 A	% DER < TER			52.95
CO ₂ Emissions (t/year)	0.35	DFEE	32.97	TFEE	33.16
Compliance Check	See BREL	% DFEE < TFEE			0.57
% DPER < TPER	4.97	DPER	59.09	TPER	62.18

Assessor Details	Mr. Benjamin Wood	Assessor ID	P717-0001
Client	Persimmon Homes Severn Valley , null		

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	West
Property Tenure	ND
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	Flat, Semi-Detached
Position of Flat	Top-floor flat
Which Floor	2
2.0 Number of Storeys	1
3.0 Date Built	2023
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation
7.0 Electricity Tariff	Standard
Smart electricity meter fitted	No
Smart gas meter fitted	No

7.0 Measurements	Ground floor:	Heat Loss Perimeter 32.43 m	Internal Floor Area 64.28 m ²	Average Storey Height 2.31 m
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8.0 Living Area	26.65	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	57.75	48.33	0.00	None	9.42	Enter Gross Area
	Wall to Corridor	Timber Frame	Timber framed wall (two layers of plasterboard)	0.26	18.00	17.26	15.31	0.43	Stairwell Access Corridor 3	1.95	Enter Gross Area

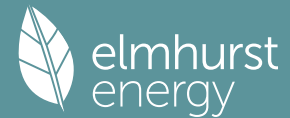
9.1 Party Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
	Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	4.38		None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Ground Floor	Plasterboard on timber frame	9.00	119.24

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
	Insulated Plane	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	64.28	0.00	None	0.00	Enter Gross Area	0.00

11.1 Party Floors	Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Party Floor	Lowest	Timber I-joists, carpeted	20.00	64.28

Summary for Input Data



occupied

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Solid Doors	Manufacturer	Solid Door							1.10
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Patio Doors	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Door	Solid Doors	Wall to Corridor	West	1.95	
Rear/LH Windows	Windows	External Wall	North East	1.10	
RH Windows	Windows	External Wall	South	1.10	
LH Windows	Windows	External Wall	North	0.60	
Rear/RH Patio Doors	Patio Doors	External Wall	South East	3.15	
Rear/RH Windows	Windows	External Wall	South East	1.19	
Front/LH Windows	Windows	External Wall	North West	2.28	

14.0 Conservatory

None

15.0 Draught Proofing

100 %

16.0 Draught Lobby

No

17.0 Thermal Bridging

Calculate Bridges

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	7.93	0.08	0.08	No
E3 Sill	Independently assessed	5.50	0.03	0.03	No
E4 Jamb	Independently assessed	21.90	0.02	0.02	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	32.43	0.08	0.08	No
E10 Eaves (insulation at ceiling level)	Independently assessed	17.09	0.04	0.04	No
E12 Gable (insulation at ceiling level)	Independently assessed	15.34	0.04	0.04	No
E16 Corner (normal)	Independently assessed	9.25	0.05	0.05	No
E17 Corner (inverted – internal area greater than external area)	Independently assessed	4.62	-0.04	-0.04	No
E18 Party wall between dwellings	Independently assessed	4.62	0.05	0.05	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	1.89	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	1.89	0.02	0.02	No

Y-value 0.04 W/m²K

18.0 Pressure Testing

Yes

Designed AP₅₀ 4.50 m³/(h.m²) @ 50 Pa

Test Method Blower Door

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present Yes

Approved Installation No

Mechanical Ventilation data Type Database

Type Mechanical extract ventilation - decentralised

MV Reference Number 500787

Duct Type Flexible

Wet Rooms 3

19.1 Mechanical extract ventilation - Decentralised

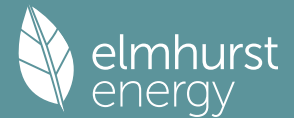
SFP	Fan/Room Type	Count
0.13	In Room Fan Kitchen	1
0.11	In Room Fan Other Wet Room	2
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.10	Through Wall Fan Kitchen	0
0.10	Through Wall Fan Other Wet Room	0

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

No

Summary for Input Data



22.0 Lighting

No Fixed Lighting	No				
	Name	Efficacy	Power	Capacity	Count
	Downlights	80.00	28	2240	5
	Spotlights	90.00	9	810	5

24.0 Main Heating 1

	Database	
Percentage of Heat	100.00	%
Database Ref. No.	104568	
Fuel Type	Electricity	
In Winter	0.00	
In Summer	0.00	
Model Name	Ecodan 5.0 kW	
Manufacturer	Mitsubishi Electric Europe B.V.	
System Type	Heat Pump	
Controls SAP Code	2207	
PCDF Controls	0	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators	
Flow Temperature	Enter value	
Flow Temperature Value	55.00	

25.0 Main Heating 2

None

26.0 Heat Networks

None

Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1									
Heat source 2									
Heat source 3									
Heat source 4									
Heat source 5									

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
Cold Water Source	From mains
Bath Count	1
Immersion Only Heating Hot Water	Yes

28.1 Showers

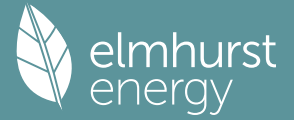
Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
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28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

	Hot Water Cylinder
Cylinder Stat	Yes
Cylinder In Heated Space	Yes
Independent Time Control	Yes
Insulation Type	Measured Loss

Summary for Input Data



Cylinder Volume	<input type="text" value="150.00"/>	L
Loss	<input type="text" value="1.23"/>	kWh/day
In Airing Cupboard	<input type="text" value="No"/>	

31.0 Thermal Store

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
			0	0
			0	0
			0	0

Summary for Input Data



Property Reference	008517 - HT - 2A - END	Issued on Date	16/03/2023
Assessment Reference	As Designed	Prop Type Ref	HT - 2A - END
Property	Plot , Land Nr Rectory Farm		

SAP Rating	78 C	DER	5.26	TER	11.25
Environmental	96 A	% DER < TER			53.24
CO ₂ Emissions (t/year)	0.4	DFEE	33.87	TFEE	35.01
Compliance Check	See BREL	% DFEE < TFEE			3.27
% DPER < TPER	5.86	DPER	55.52	TPER	58.98

Assessor Details	Mr. Benjamin Wood	Assessor ID	P717-0001
Client	Persimmon Homes Severn Valley , null		

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East
Property Tenure	ND
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	House, End-Terrace
2.0 Number of Storeys	2
3.0 Date Built	2023
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation

7.0 Electricity Tariff	Standard
Smart electricity meter fitted	No
Smart gas meter fitted	No

7.0 Measurements		Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	Ground floor:	17.85 m	39.75 m ²	2.34 m
	1st Storey:	17.85 m	39.75 m ²	2.69 m

8.0 Living Area	16.03	m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	89.71	79.18	0.00	None	10.53	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber frame with/without sheathing board	0.00	20.00	43.14		None

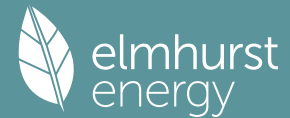
Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Plasterboard on timber frame	9.00	58.78
First Floor	Plasterboard on timber frame	9.00	88.77

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Insulated Plane	External Plane	Plasterboard, insulated at ceiling level	0.09	9.00	39.75	0.00	None	0.00	Enter Gross Area	0.00

Description	Storey	Construction	Area (m ²)
Ground Floor	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	39.75

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	39.75

Summary for Input Data



11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
First Floor		Plasterboard ceiling, carpeted chipboard floor	9.00	39.75

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Solid Door	Manufacturer	Solid Door							1.10
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Patio Doors	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Half-Glazed Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.05			0.63		0.70	1.60

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Door	Solid Door	External Wall	East	2.13	
Front Windows	Windows	External Wall	East	3.38	
Rear Door	Half-Glazed Door	External Wall	West	2.13	
Rear Windows	Windows	External Wall	West	2.89	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	7.25	0.08	0.08	No
E3 Sill	Independently assessed	5.22	0.03	0.03	No
E4 Jamb	Independently assessed	20.40	0.02	0.02	No
E5 Ground floor (normal)	Independently assessed	17.85	0.09	0.09	No
E6 Intermediate floor within a dwelling	Independently assessed	17.85	0.03	0.03	No
E10 Eaves (insulation at ceiling level)	Independently assessed	9.26	0.04	0.04	No
E12 Gable (insulation at ceiling level)	Independently assessed	8.58	0.04	0.04	No
E16 Corner (normal)	Independently assessed	10.05	0.05	0.05	No
E18 Party wall between dwellings	Independently assessed	10.05	-0.00	-0.00	No
P1 Party wall - Ground floor	Independently assessed	8.58	0.03	0.03	No
P2 Party wall - Intermediate floor within a dwelling	Independently assessed	8.58	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	8.58	0.02	0.02	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

Approved Installation

Mechanical Ventilation data Type

Type

MV Reference Number

Duct Type

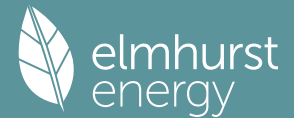
Wet Rooms

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Summary for Input Data



21.0 Fixed Cooling System

No

22.0 Lighting

No Fixed Lighting

No

Name	Efficacy	Power	Capacity	Count
Downlights	80.00	28	2240	7
Spotlights	18.00	5	90	5

24.0 Main Heating 1

Database

Percentage of Heat

100.00

%

Database Ref. No.

104568

Fuel Type

Electricity

In Winter

0.00

In Summer

0.00

Model Name

Ecodan 5.0 kW

Manufacturer

Mitsubishi Electric Europe B.V.

System Type

Heat Pump

Controls SAP Code

2207

PCDF Controls

0

Is MHS Pumped

Pump in heated space

Heating Pump Age

2013 or later

Heat Emitter

Radiators

Flow Temperature

Enter value

Flow Temperature Value

55.00

25.0 Main Heating 2

None

26.0 Heat Networks

None

Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1									
Heat source 2									
Heat source 3									
Heat source 4									
Heat source 5									

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

Cold Water Source

From mains

Bath Count

1

Immersion Only Heating Hot Water

Yes

28.1 Showers

Description

Shower Type

Flow Rate [l/min]

Rated Power [kW]

Connected

Connected To

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Hot Water Cylinder

Cylinder Stat

Yes

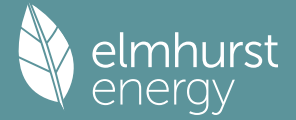
Cylinder In Heated Space

Yes

Independent Time Control

Yes

Summary for Input Data



Insulation Type	Measured Loss	
Cylinder Volume	150.00	L
Loss	1.23	kWh/day
In Airing Cupboard	No	

31.0 Thermal Store

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

Typical Cost	Typical savings per year	Ratings after improvement	
		SAP rating	Environmental Impact
£4,000 - £6,000	£66	B 81	A 96
£3,500 - £5,500	£158	B 87	A 97
		0	0

Summary for Input Data



Property Reference	008517 - HT - 2A - MID		Issued on Date	16/03/2023
Assessment Reference	As Designed	Prop Type Ref	HT - 2A - MID	
Property	Plot , Land Nr Rectory Farm			

SAP Rating	80 C	DER	4.77	TER	10.12
Environmental	96 A	% DER < TER			52.87
CO ₂ Emissions (t/year)	0.36	DFEE	26.80	TFEE	29.55
Compliance Check	See BREL	% DFEE < TFEE			9.32
% DPER < TPER	4.48	DPER	50.54	TPER	52.91

Assessor Details	Mr. Benjamin Wood	Assessor ID	P717-0001
Client	Persimmon Homes Severn Valley , null		

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East
Property Tenure	ND
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	House, Mid-Terrace
2.0 Number of Storeys	2
3.0 Date Built	2021
4.0 Sheltered Sides	3
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation

7.0 Electricity Tariff	Standard
Smart electricity meter fitted	No
Smart gas meter fitted	No

7.0 Measurements		Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	Ground floor:	9.26 m	39.75 m ²	2.34 m
	1st Storey:	9.26 m	39.75 m ²	2.69 m

8.0 Living Area	16.03	m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	46.57	36.04	0.00	None	10.53	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber frame with/without sheathing board	0.00	20.00	86.28		None

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Plasterboard on timber frame	9.00	58.78
First Floor	Plasterboard on timber frame	9.00	88.77

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Insulated Plane	External Plane	Plasterboard, insulated at ceiling level	0.09	9.00	39.75	0.00	None	0.00	Enter Gross Area	0.00

Description	Storey	Construction	Area (m ²)
Ground Floor	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	39.75

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.11	None	0.00	75.00	39.75

Summary for Input Data



11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
First Floor		Plasterboard ceiling, carpeted chipboard floor	9.00	39.75

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Solid Door	Manufacturer	Solid Door							1.10
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Patio Doors	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Half-Glazed Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.05			0.63		0.70	1.60

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Door	Solid Door	External Wall	East	2.13	
Front Windows	Windows	External Wall	East	3.38	
Rear Door	Half-Glazed Door	External Wall	West	2.13	
Rear Windows	Windows	External Wall	West	2.89	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	7.25	0.08	0.08	No
E3 Sill	Independently assessed	5.22	0.03	0.03	No
E4 Jamb	Independently assessed	20.40	0.02	0.02	No
E5 Ground floor (normal)	Independently assessed	9.26	0.09	0.09	No
E6 Intermediate floor within a dwelling	Independently assessed	9.26	0.03	0.03	No
E10 Eaves (insulation at ceiling level)	Independently assessed	9.26	0.04	0.04	No
E18 Party wall between dwellings	Independently assessed	20.11	-0.00	-0.00	No
P1 Party wall - Ground floor	Independently assessed	17.16	0.03	0.03	No
P2 Party wall - Intermediate floor within a dwelling	Independently assessed	17.16	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	17.16	0.02	0.02	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

Approved Installation

Mechanical Ventilation data Type

Type

MV Reference Number

Duct Type

Wet Rooms

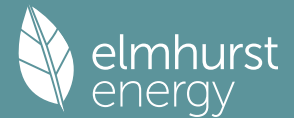
19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

Summary for Input Data



22.0 Lighting

No Fixed Lighting	No				
	Name	Efficacy	Power	Capacity	Count
	Downlights	80.00	28	2240	8
	Spotlights	90.00	9	810	5

24.0 Main Heating 1

Database	Database
Percentage of Heat	100.00 %
Database Ref. No.	104568
Fuel Type	Electricity
In Winter	0.00
In Summer	0.00
Model Name	Ecodan 5.0 kW
Manufacturer	Mitsubishi Electric Europe B.V.
System Type	Heat Pump
Controls SAP Code	2207
PCDF Controls	0
Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators
Flow Temperature	Enter value
Flow Temperature Value	55.00

25.0 Main Heating 2

None

26.0 Heat Networks

None

	Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1										
Heat source 2										
Heat source 3										
Heat source 4										
Heat source 5										

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
Cold Water Source	From mains
Bath Count	1
Immersion Only Heating Hot Water	Yes

28.1 Showers

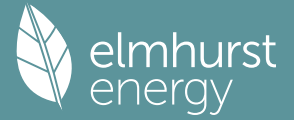
Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
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28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Hot Water Cylinder	Hot Water Cylinder
Cylinder Stat	Yes
Cylinder In Heated Space	Yes
Independent Time Control	Yes
Insulation Type	Measured Loss

Summary for Input Data



Cylinder Volume	<input type="text" value="150.00"/>	L
Loss	<input type="text" value="1.23"/>	kWh/day
In Airing Cupboard	<input type="text" value="No"/>	

31.0 Thermal Store

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

Typical Cost	Typical savings per year	Ratings after improvement	
		SAP rating	Environmental Impact
£4,000 - £6,000	£66	B 82	A 96
£3,500 - £5,500	£156	B 89	A 98
		0	0

Summary for Input Data



Property Reference	008517 - HT - 4A - Semi	Issued on Date	16/03/2023
Assessment Reference	As Designed - As	Prop Type Ref	HT - Whiteleaf - DET
Property	Plot , Land Nr Rectory Farm		

SAP Rating	80 C	DER	4.26	TER	9.80
Environmental	96 A	% DER < TER			56.53
CO ₂ Emissions (t/year)	0.46	DFEE	32.51	TFEE	32.58
Compliance Check	See BREL	% DFEE < TFEE			0.22
% DPER < TPER	12.35	DPER	44.91	TPER	51.24

Assessor Details	Mr. Benjamin Wood	Assessor ID	P717-0001
Client	Persimmon Homes Severn Valley , null		

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East
Property Tenure	ND
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	House, Semi-Detached
2.0 Number of Storeys	3
3.0 Date Built	2023
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation

7.0 Electricity Tariff	Standard
Smart electricity meter fitted	No
Smart gas meter fitted	No

7.0 Measurements	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	18.32 m	41.30 m ²	2.34 m
1st Storey:	18.32 m	41.30 m ²	2.68 m
2nd Storey:	18.32 m	29.47 m ²	1.98 m

8.0 Living Area	14.91	m ²
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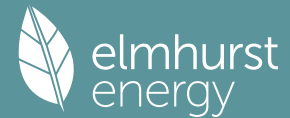
9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	108.20	96.54	0.00	None	11.66	Enter Gross Area
	Dormer Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.44	9.00	4.38	3.42	0.00	None	0.96	Enter Gross Area
	Wall to Roof Void	Timber Frame	Timber framed wall (one layer of plasterboard)	0.11	9.00	14.55	14.55	0.50	Room In Roof	0.00	Enter Gross Area

9.1 Party Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
	Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	57.31		None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Ground Floor	Plasterboard on timber frame	9.00	62.26
	First Floor	Plasterboard on timber frame	9.00	75.58
	Second Floor	Plasterboard on timber frame	9.00	47.05

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
	Insulated Slope	External Slope Roof	Plasterboard, insulated slope	0.15	9.00	17.21	0.54	None	0.00	Enter Gross Area	0.54
	Dormer Flat Roof	External Flat Roof	Plasterboard, insulated flat roof	0.33	9.00	1.53	0.00	None	0.00	Enter Gross Area	0.00
	1st Sheltered Ceiling	External Plane Roof	Plasterboard, insulated at ceiling level	0.11	9.00	11.83	0.00	None	0.00	Enter Gross Area	0.00
	2ns Sheltered Ceiling	External Plane Roof	Plasterboard, insulated at ceiling level	0.27	9.00	15.76	0.00	Room	0.50	Enter Gross Area	0.00

Summary for Input Data



Roof

In Roof

Area

10.2 Internal Ceilings

Description	Storey	Construction	Area (m ²)
Ground Floor	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	41.30
Second Floor	+1	Plasterboard ceiling, carpeted chipboard floor	29.47

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	41.30

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
First Floor		Plasterboard ceiling, carpeted chipboard floor	9.00	41.30
Second Floor		Plasterboard ceiling, carpeted chipboard floor	9.00	29.47

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Solid Doors	Manufacturer	Solid Door							1.10
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Patio Doors	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Half-Glazed Doors	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.10
Roof Window	Manufacturer	Roof Window	Double Low-E Soft 0.05			0.63		0.70	1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Door	Solid Doors	External Wall	East	2.13	
Front Windows	Windows	External Wall	East	3.52	
Rear Windows	Windows	External Wall	West	3.88	
Rear Doors	Half-Glazed Doors	External Wall	West	2.13	
Front Window	Windows	Dormer Wall	East	0.96	
Rear Roof Window	Roof Window	Insulated Slope	West	0.54	45

14.0 Conservatory

None

15.0 Draught Proofing

100 %

16.0 Draught Lobby

No

17.0 Thermal Bridging

Calculate Bridges

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	8.20	0.08	0.08	No
E3 Sill	Independently assessed	6.17	0.03	0.03	No
E4 Jamb	Independently assessed	22.80	0.02	0.02	No
E5 Ground floor (normal)	Independently assessed	18.32	0.09	0.09	No
E6 Intermediate floor within a dwelling	Independently assessed	36.65	0.03	0.03	No
E16 Corner (normal)	Independently assessed	10.32	0.05	0.05	No
E13 Gable (insulation at rafter level)	Independently assessed	11.32	-0.00	-0.00	No
E11 Eaves (insulation at rafter level)	Independently assessed	10.32	0.02	0.02	No
E18 Party wall between dwellings	Independently assessed	10.32	-0.00	-0.00	No
P1 Party wall - Ground floor	Independently assessed	8.01	0.03	0.03	No
P2 Party wall - Intermediate floor within a dwelling	Independently assessed	16.01	0.00	0.00	No
P5 Party wall - Roof (insulation at rafter level)	Independently assessed	11.32	0.01	0.01	No
R1 Head of roof window	Independently assessed	1.46	0.06	0.06	No
R2 Sill of roof window	Independently assessed	1.46	0.06	0.06	No
R3 Jamb of roof window	Independently assessed	1.46	0.06	0.06	No
R4 Ridge (vaulted ceiling)	Table K1 - Default	5.16	0.12	0.12	No
R7 Flat ceiling (inverted)	Independently assessed	6.59	-0.02	-0.02	No
R9 Roof to wall (flat ceiling)	Independently assessed	4.28	0.02	0.02	No
E16 Corner (normal)	Table K1 - Default	1.27	0.18	0.18	No

Y-value 0.03 W/m²K

18.0 Pressure Testing

Yes

Designed AP₅₀ 4.50 m³/(h.m²) @ 50 Pa

Test Method Blower Door

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present Yes

Approved Installation No

Mechanical Ventilation data Type Database

Type Mechanical extract ventilation - decentralised

Summary for Input Data



MV Reference Number	500787
Duct Type	Flexible
Wet Rooms	4

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.13	In Room Fan Kitchen	0
0.11	In Room Fan Other Wet Room	2
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.10	Through Wall Fan Kitchen	1
0.10	Through Wall Fan Other Wet Room	1

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

22.0 Lighting

No Fixed Lighting

Name	Efficacy	Power	Capacity	Count
Downlights	80.00	28	2240	11
Spotlights	90.00	9	810	5

24.0 Main Heating 1

Database	<input type="text" value="Database"/>
Percentage of Heat	<input type="text" value="100.00"/> %
Database Ref. No.	<input type="text" value="104640"/>
Fuel Type	<input type="text" value="Electricity"/>
In Winter	<input type="text" value="0.00"/>
In Summer	<input type="text" value="0.00"/>
Model Name	<input type="text" value="Ecodan 8.5 kW"/>
Manufacturer	<input type="text" value="Mitsubishi Electric Europe B.V."/>
System Type	<input type="text" value="Heat Pump"/>
Controls SAP Code	<input type="text" value="2207"/>
PCDF Controls	<input type="text" value="0"/>
Is MHS Pumped	<input type="text" value="Pump in heated space"/>
Heating Pump Age	<input type="text" value="2013 or later"/>
Heat Emitter	<input type="text" value="Radiators"/>
Flow Temperature	<input type="text" value="Enter value"/>
Flow Temperature Value	<input type="text" value="55.00"/>

25.0 Main Heating 2

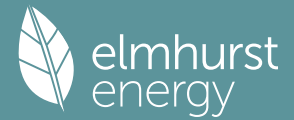
26.0 Heat Networks

Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1									
Heat source 2									
Heat source 3									
Heat source 4									
Heat source 5									

28.0 Water Heating

Water Heating	<input type="text" value="Main Heating 1"/>
SAP Code	<input type="text" value="901"/>
Flue Gas Heat Recovery System	<input type="text" value="No"/>
Waste Water Heat Recovery Instantaneous System 1	<input type="text" value="No"/>
Waste Water Heat Recovery Instantaneous System 2	<input type="text" value="No"/>
Waste Water Heat Recovery Storage System	<input type="text" value="No"/>

Summary for Input Data



Solar Panel	No
Water use <= 125 litres/person/day	Yes
Cold Water Source	From mains
Bath Count	1
Immersion Only Heating Hot Water	Yes

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
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28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Hot Water Cylinder	Hot Water Cylinder
Cylinder Stat	Yes
Cylinder In Heated Space	Yes
Independent Time Control	Yes
Insulation Type	Measured Loss
Cylinder Volume	150.00 L
Loss	1.23 kWh/day
In Airing Cupboard	No

31.0 Thermal Store

None

34.0 Small-scale Hydro

None

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Recommendations

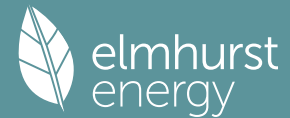
Lower cost measures

None

Further measures to achieve even higher standards

Typical Cost	Typical savings per year	Ratings after improvement	
		SAP rating	Environmental Impact
£4,000 - £6,000	£67	B 82	A 96
£3,500 - £5,500	£169	B 88	A 97
		0	0

Summary for Input Data



Property Reference	008517 - HT - Arden - END		Issued on Date	16/03/2023
Assessment Reference	As Designed - As	Prop Type Ref	HT - Arden - END	
Property	Plot , Land Nr Rectory Farm			

SAP Rating	78 C	DER	6.29	TER	14.46
Environmental	96 A	% DER < TER			56.50
CO ₂ Emissions (t/year)	0.3	DFEE	36.82	TFEE	39.03
Compliance Check	See BREL	% DFEE < TFEE			5.65
% DPER < TPER	12.62	DPER	66.54	TPER	76.15

Assessor Details	Mr. Benjamin Wood	Assessor ID	P717-0001
Client	Persimmon Homes Severn Valley , null		

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East
Property Tenure	ND
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	House, End-Terrace
2.0 Number of Storeys	2
3.0 Date Built	2022
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation

7.0 Electricity Tariff	Standard
Smart electricity meter fitted	No
Smart gas meter fitted	No

7.0 Measurements		Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	Ground floor:	14.20 m	25.14 m ²	2.33 m
	1st Storey:	14.20 m	25.14 m ²	2.57 m

8.0 Living Area	20.11	m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	69.52	60.49	0.00	None	9.03	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber frame with/without sheathing board	0.00	20.00	33.04		None

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Plasterboard on timber frame	9.00	31.27
First Floor	Plasterboard on timber frame	9.00	49.60

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Insulated Plane	External Plane	Plasterboard, insulated at ceiling level	0.09	9.00	25.14	0.00	None	0.00	Enter Gross Area	0.00

Description	Storey	Construction	Area (m ²)
Ground Floor	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	25.14

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	25.14

Summary for Input Data



11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
First Floor		Plasterboard ceiling, carpeted chipboard floor	9.00	25.14

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Solid Doors	Manufacturer	Solid Door							1.10
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Patio Doors	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Door	Solid Doors	External Wall	East	2.13	
Front Windows	Windows	External Wall	East	1.97	
RH Windows	Windows	External Wall	North	0.48	
Rear Windows	Windows	External Wall	West	1.36	
Rear Patio Doors	Patio Doors	External Wall	West	3.09	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	5.73	0.08	0.08	No
E3 Sill	Independently assessed	3.31	0.03	0.03	No
E4 Jamb	Independently assessed	19.80	0.02	0.02	No
E5 Ground floor (normal)	Independently assessed	14.20	0.09	0.09	No
E6 Intermediate floor within a dwelling	Independently assessed	14.20	0.03	0.03	No
E10 Eaves (insulation at ceiling level)	Independently assessed	7.45	0.04	0.04	No
E12 Gable (insulation at ceiling level)	Independently assessed	6.75	0.04	0.04	No
E16 Corner (normal)	Independently assessed	9.79	0.05	0.05	No
E18 Party wall between dwellings	Independently assessed	9.79	-0.00	-0.00	No
P1 Party wall - Ground floor	Independently assessed	6.75	0.03	0.03	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	6.75	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	6.75	0.02	0.02	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

Approved Installation

Mechanical Ventilation data Type

Type

MV Reference Number

Duct Type

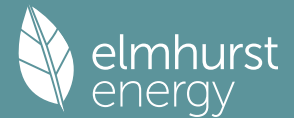
Wet Rooms

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Summary for Input Data



21.0 Fixed Cooling System

No

22.0 Lighting

No Fixed Lighting

No

Name	Efficacy	Power	Capacity	Count
Downlights	80.00	28	2240	5
Spotlights	90.00	9	810	5

24.0 Main Heating 1

Database

Percentage of Heat

100.00

%

Database Ref. No.

104568

Fuel Type

Electricity

In Winter

0.00

In Summer

0.00

Model Name

Ecodan 5.0 kW

Manufacturer

Mitsubishi Electric Europe B.V.

System Type

Heat Pump

Controls SAP Code

2207

PCDF Controls

0

Is MHS Pumped

Pump in heated space

Heating Pump Age

2013 or later

Heat Emitter

Radiators

Flow Temperature

Enter value

Flow Temperature Value

55.00

25.0 Main Heating 2

None

26.0 Heat Networks

None

Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1									
Heat source 2									
Heat source 3									
Heat source 4									
Heat source 5									

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

Cold Water Source

From mains

Bath Count

1

Immersion Only Heating Hot Water

Yes

28.1 Showers

Description

Shower Type

Flow Rate [l/min]

Rated Power [kW]

Connected

Connected To

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Hot Water Cylinder

Cylinder Stat

Yes

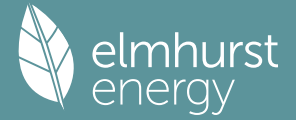
Cylinder In Heated Space

Yes

Independent Time Control

Yes

Summary for Input Data



Insulation Type	Measured Loss	
Cylinder Volume	150.00	L
Loss	1.23	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	

31.0 Thermal Store

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
£4,000 - £6,000		£62	B 81	A 96
£3,500 - £5,500		£137	B 89	A 98
			0	0

Summary for Input Data



Property Reference	008517 - HT - Ashdown - Semi		Issued on Date	16/03/2023
Assessment Reference	As Designed - As	Prop Type Ref	HT - Ashdown - Semi	
Property	Plot , Land Nr Rectory Farm			

SAP Rating	79 C	DER	4.71	TER	10.79
Environmental	96 A	% DER < TER			56.35
CO ₂ Emissions (t/year)	0.45	DFEE	33.20	TFEE	34.27
Compliance Check	See BREL	% DFEE < TFEE			3.12
% DPER < TPER	12.33	DPER	49.53	TPER	56.49

Assessor Details	Mr. Benjamin Wood	Assessor ID	P717-0001
Client	Persimmon Homes Severn Valley , null		

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East
Property Tenure	ND
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	House, Semi-Detached
2.0 Number of Storeys	3
3.0 Date Built	2023
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation

7.0 Electricity Tariff	Standard
Smart electricity meter fitted	No
Smart gas meter fitted	No

7.0 Measurements	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	16.33 m	33.32 m ²	2.32 m
1st Storey:	16.33 m	33.32 m ²	2.55 m
2nd Storey:	16.33 m	33.32 m ²	2.55 m

8.0 Living Area	13.89	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	121.13	104.00	0.00	None	17.13	Enter Gross Area

9.1 Party Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
	Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber frame with/without sheathing board	0.00	20.00	61.79		None

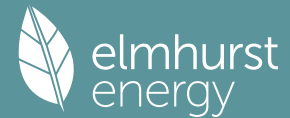
9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	GF	Plasterboard on timber frame	9.00	71.06
	FF	Plasterboard on timber frame	9.00	64.72
	SF	Plasterboard on timber frame	9.00	77.16

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
	Insulated Plane	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	33.32	0.00	None	0.00	Enter Gross Area	0.00

10.2 Internal Ceilings	Description	Storey	Construction	Area (m ²)
	GF	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	33.32
	FF	+1	Plasterboard ceiling, carpeted chipboard floor	33.32

11.0 Heat Loss Floors

Summary for Input Data



Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	33.32

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
SF		Plasterboard ceiling, carpeted chipboard floor	9.00	33.32
FF		Plasterboard ceiling, carpeted chipboard floor	9.00	33.32

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Solid Door	Manufacturer	Solid Door							1.10
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Door	Solid Door	External Wall	East	1.95	
Front Windows	Windows	External Wall	East	4.36	
LH Windows	Windows	External Wall	South	0.60	
Rear Windows	Windows	External Wall	West	4.53	
Front Patio Doors	Patio Door	External Wall	East	2.52	
Rear Patio Door	Patio Door	External Wall	West	3.17	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E1 Steel lintel with perforated steel base plate	Independently assessed	11.52	0.08	0.08	No
E3 Sill	Independently assessed	7.88	0.03	0.03	No
E4 Jamb	Independently assessed	36.60	0.02	0.02	No
E5 Ground floor (normal)	Independently assessed	16.33	0.09	0.09	No
E6 Intermediate floor within a dwelling	Independently assessed	32.66	0.03	0.03	No
E10 Eaves (insulation at ceiling level)	Independently assessed	8.00	0.04	0.04	No
E12 Gable (insulation at ceiling level)	Independently assessed	8.33	0.04	0.04	No
E16 Corner (normal)	Independently assessed	14.83	0.05	0.05	No
E18 Party wall between dwellings	Independently assessed	14.83	-0.00	-0.00	No
P1 Party wall - Ground floor	Independently assessed	8.33	0.03	0.03	No
P2 Party wall - Intermediate floor within a dwelling	Independently assessed	8.33	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	8.33	0.02	0.02	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

Approved Installation

Mechanical Ventilation data Type

Type

MV Reference Number

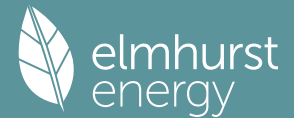
Duct Type

Wet Rooms

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.13	In Room Fan Kitchen	0
0.11	In Room Fan Other Wet Room	2
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.10	Through Wall Fan Kitchen	1
0.10	Through Wall Fan	1

Summary for Input Data



Other Wet Room

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

No

22.0 Lighting

No Fixed Lighting

No

Name	Efficacy	Power	Capacity	Count
Downlights	80.00	28	2240	11
Spotlights	80.00	9	720	8

24.0 Main Heating 1

Database

Percentage of Heat

100.00

%

Database Ref. No.

104568

Fuel Type

Electricity

In Winter

0.00

In Summer

0.00

Model Name

Ecodan 5.0 kW

Manufacturer

Mitsubishi Electric Europe B.V.

System Type

Heat Pump

Controls SAP Code

2207

PCDF Controls

0

Is MHS Pumped

Pump in heated space

Heating Pump Age

2013 or later

Heat Emitter

Radiators

Flow Temperature

Enter value

Flow Temperature Value

55.00

25.0 Main Heating 2

None

26.0 Heat Networks

None

Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
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Heat source 1
Heat source 2
Heat source 3
Heat source 4
Heat source 5

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

Cold Water Source

From mains

Bath Count

1

Immersion Only Heating Hot Water

Yes

28.1 Showers

Description

Shower Type

Flow Rate [l/min]

Rated Power [kW]

Connected

Connected To

28.3 Waste Water Heat Recovery System

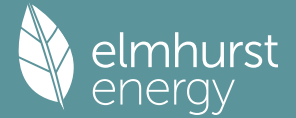
29.0 Hot Water Cylinder

Hot Water Cylinder

Cylinder Stat

Yes

Summary for Input Data



Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	150.00	L
Loss	1.23	kWh/day
In Airing Cupboard	No	

31.0 Thermal Store

Recommendations

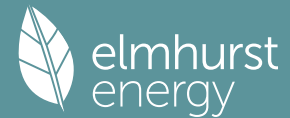
Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
	£4,000 - £6,000	£68	B 81	A 96
	£3,500 - £5,500	£166	B 87	A 97
			0	0

Summary for Input Data



Property Reference	008517 - HT - Burnham - Det		Issued on Date	16/03/2023
Assessment Reference	As Designed - As	Prop Type Ref	HT - Burnham - Det	
Property	Plot , Land Nr Rectory Farm			

SAP Rating	77 C	DER	5.15	TER	11.71
Environmental	95 A	% DER < TER			56.02
CO ₂ Emissions (t/year)	0.5	DFEE	39.72	TFEE	41.99
Compliance Check	See BREL	% DFEE < TFEE			5.40
% DPER < TPER	11.77	DPER	54.08	TPER	61.30

Assessor Details	Mr. Benjamin Wood	Assessor ID	P717-0001
Client	Persimmon Homes Severn Valley , null		

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East
Property Tenure	ND
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	House, Detached
2.0 Number of Storeys	2
3.0 Date Built	2022
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation

7.0 Electricity Tariff	Standard
Smart electricity meter fitted	No
Smart gas meter fitted	No

7.0 Measurements		Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	Ground floor:	31.87 m	43.27 m ²	2.57 m
	1st Storey:	31.77 m	58.67 m ²	2.30 m

8.0 Living Area	15.53	m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	130.81	113.66	0.00	None	17.15	Enter Gross Area
Wall to Garage	Timber Frame	Timber framed wall (two layers of plasterboard)	0.21	18.00	21.07	21.07	0.35	Garage Single 1 Outside	0.00	Enter Gross Area
Wall to Garage (Brick)	Timber Frame	Timber framed wall (two layers of plasterboard)	0.26	18.00	3.08	3.08	0.33	Garage Single 1 Outside	0.00	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	36.76		None

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Plasterboard on timber frame	9.00	66.87
First Floor	Plasterboard on timber frame	9.00	142.51

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Insulated Plane	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	58.67	0.00	None	0.00	Enter Gross Area	0.00

Description	Storey	Construction	Area (m ²)
Ground Floor	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	43.27

Summary for Input Data



11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	43.27
Floor above Garage	Exposed Floor - Timber	+1	Timber exposed floor, insulation between joists	0.15	Garage Single 1 Outside	0.00	20.00	15.40

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
First Floor		Plasterboard ceiling, carpeted chipboard floor	9.00	43.27

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Solid Door	Manufacturer	Solid Door							1.10
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
French Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Solid Door	External Wall	East	2.15	
Front Windows	Windows	External Wall	East	5.37	
RH Window	Windows	External Wall	North	0.48	
Rear Windows	Windows	External Wall	West	5.35	
Rear Patio Door	French Door	External Wall	West	3.80	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E1 Steel lintel with perforated steel base plate	Independently assessed	12.15	0.08	0.08 Persimmon Bespoke	No
E3 Sill	Independently assessed	9.31	0.03	0.03 Persimmon Bespoke	No
E4 Jamb	Independently assessed	29.40	0.02	0.02 Persimmon Bespoke	No
E5 Ground floor (normal)	Independently assessed	23.66	0.09	0.09 Persimmon Bespoke	No
E5 Ground floor (normal)	Independently assessed	8.21	0.09	0.09 Wall to Garage	No
E20 Exposed floor (normal)	Independently assessed	7.96	0.08	0.08 Persimmon Bespoke	No
E21 Exposed floor (inverted)	Independently assessed	7.96	-0.01	-0.01 Persimmon Bespoke	No
E6 Intermediate floor within a dwelling	Independently assessed	22.46	0.03	0.03 Persimmon Bespoke	No
E10 Eaves (insulation at ceiling level)	Independently assessed	13.40	0.04	0.04	No
E12 Gable (insulation at ceiling level)	Independently assessed	18.37	0.04	0.04 Persimmon Bespoke	No
E16 Corner (normal)	Independently assessed	19.22	0.05	0.05 Persimmon Bespoke	No
E16 Corner (normal)	Table K1 - Default	2.57	0.18	0.18 Wall to Garage (Solid)	No
E17 Corner (inverted – internal area greater than external area)	Independently assessed	2.30	-0.04	-0.04 Persimmon Bespoke	No
E17 Corner (inverted – internal area greater than external area)	Table K1 - Default	2.57	0.00	0.00 Wall to Garage (Solid)	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

Approved Installation

Mechanical Ventilation data Type

Type

MV Reference Number

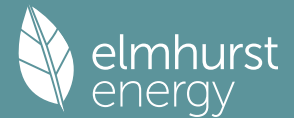
Duct Type

Wet Rooms

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.13	In Room Fan Kitchen	0
0.11	In Room Fan Other Wet Room	2
0.00	In Duct Fan Kitchen	0

Summary for Input Data



0.00	In Duct Fan Other	0
	Wet Room	
0.10	Through Wall Fan	1
	Kitchen	
0.10	Through Wall Fan	1
	Other Wet Room	

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

No

22.0 Lighting

No Fixed Lighting

No

Name	Efficacy	Power	Capacity	Count
Downlights	80.00	28	2240	9
Spotlights	90.00	9	810	8

24.0 Main Heating 1

Database

Percentage of Heat

100.00

%

Database Ref. No.

104568

Fuel Type

Electricity

In Winter

0.00

In Summer

0.00

Model Name

Ecodan 5.0 kW

Manufacturer

Mitsubishi Electric Europe B.V.

System Type

Heat Pump

Controls SAP Code

2207

PCDF Controls

0

Is MHS Pumped

Pump in heated space

Heating Pump Age

2013 or later

Heat Emitter

Radiators

Flow Temperature

Enter value

Flow Temperature Value

55.00

25.0 Main Heating 2

None

26.0 Heat Networks

None

Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1									
Heat source 2									
Heat source 3									
Heat source 4									
Heat source 5									

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

Cold Water Source

From mains

Bath Count

1

Immersion Only Heating Hot Water

Yes

28.1 Showers

Description

Shower Type

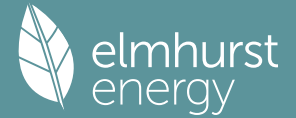
Flow Rate [l/min]

Rated Power [kW]

Connected

Connected To

Summary for Input Data



28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Hot Water Cylinder	Hot Water Cylinder	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	150.00	L
Loss	1.23	kWh/day
In Airing Cupboard	No	

31.0 Thermal Store

None

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

Typical Cost	Typical savings per year	Ratings after improvement	
		SAP rating	Environmental Impact
£4,000 - £6,000	£69	C 79	A 96
£3,500 - £5,500	£168	B 85	A 97
		0	0

Summary for Input Data



Property Reference	008517 - HT - Charnwood - DET		Issued on Date	16/03/2023
Assessment Reference	As Designed	Prop Type Ref	HT - Charnwood - DET	
Property	Plot , Land Nr Rectory Farm			

SAP Rating	77 C	DER	5.28	TER	11.07
Environmental	95 A	% DER < TER			52.30
CO ₂ Emissions (t/year)	0.47	DFEE	39.14	TFEE	39.33
Compliance Check	See BREL	% DFEE < TFEE			0.49
% DPER < TPER	3.86	DPER	55.50	TPER	57.73

Assessor Details	Mr. Benjamin Wood	Assessor ID	P717-0001
Client	Persimmon Homes Severn Valley , null		

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East
Property Tenure	ND
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	House, Detached
2.0 Number of Storeys	2
3.0 Date Built	2022
4.0 Sheltered Sides	3
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation

7.0 Electricity Tariff	Standard
Smart electricity meter fitted	No
Smart gas meter fitted	No

7.0 Measurements		Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	Ground floor:	27.68 m	46.23 m ²	2.33 m
	1st Storey:	27.68 m	46.23 m ²	2.57 m

8.0 Living Area	17.55	m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	135.54	115.53	0.00	None	20.01	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber frame with/without sheathing board	0.00	20.00	66.08		None

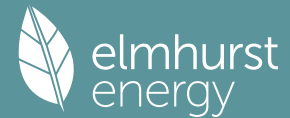
Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Plasterboard on timber frame	9.00	98.75
First Floor	Plasterboard on timber frame	9.00	142.12

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Insulated Plane	External Plane	Plasterboard, insulated at ceiling level	0.09	9.00	46.23	0.00	None	0.00	Enter Gross Area	0.00

Description	Storey	Construction	Area (m ²)
Ground Floor	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	46.23

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	46.23

Summary for Input Data



11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
First Floor		Plasterboard ceiling, carpeted chipboard floor	9.00	46.23

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Solid Doors	Manufacturer	Solid Door							1.10
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Patio Doors	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Half-Glazed Doors	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.60

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Door	Solid Doors	External Wall	East	2.15	
Front Windows	Windows	External Wall	East	7.94	
Rear Windows	Windows	External Wall	West	3.99	
Rear Patio Doors	Patio Doors	External Wall	West	3.78	
Rear Door	Half-Glazed Doors	External Wall	West	2.15	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	13.95	0.08	0.08	No
E3 Sill	Independently assessed	10.10	0.03	0.03	No
E4 Jamb	Independently assessed	33.30	0.02	0.02	No
E5 Ground floor (normal)	Independently assessed	27.68	0.09	0.09	No
E6 Intermediate floor within a dwelling	Independently assessed	27.68	0.03	0.03	No
E10 Eaves (insulation at ceiling level)	Independently assessed	16.43	0.04	0.04	No
E12 Gable (insulation at ceiling level)	Independently assessed	11.26	0.04	0.04	No
E16 Corner (normal)	Independently assessed	19.58	0.05	0.05	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

Approved Installation

Mechanical Ventilation data Type

Type

MV Reference Number

Duct Type

Wet Rooms

19.1 Mechanical extract ventilation - Decentralised

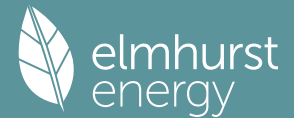
SFP	Fan/Room Type	Count
0.13	In Room Fan Kitchen	0
0.11	In Room Fan Other Wet Room	2
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.10	Through Wall Fan Kitchen	1
0.10	Through Wall Fan Other Wet Room	1

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

22.0 Lighting

Summary for Input Data



No Fixed Lighting

No

Name	Efficacy	Power	Capacity	Count
Downlights	80.00	28	2240	9
Spotlights	90.00	9	810	8

24.0 Main Heating 1

Database

Percentage of Heat

100.00 %

Database Ref. No.

104568

Fuel Type

Electricity

In Winter

0.00

In Summer

0.00

Model Name

Ecodan 5.0 kW

Manufacturer

Mitsubishi Electric Europe B.V.

System Type

Heat Pump

Controls SAP Code

2207

PCDF Controls

0

Is MHS Pumped

Pump in heated space

Heating Pump Age

2013 or later

Heat Emitter

Radiators

Flow Temperature

Enter value

Flow Temperature Value

55.00

25.0 Main Heating 2

None

26.0 Heat Networks

None

Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1									
Heat source 2									
Heat source 3									
Heat source 4									
Heat source 5									

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

Cold Water Source

From mains

Bath Count

1

Immersion Only Heating Hot Water

Yes

28.1 Showers

Description

Shower Type

Flow Rate [l/min]

Rated Power [kW]

Connected

Connected To

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

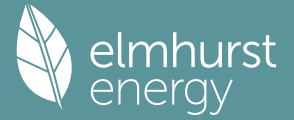
Insulation Type

Measured Loss

Cylinder Volume

150.00 L

Summary for Input Data



Loss kWh/day
In Airing Cupboard

31.0 Thermal Store

Recommendations

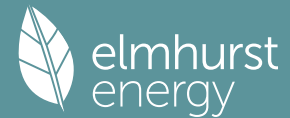
Lower cost measures

None

Further measures to achieve even higher standards

Typical Cost	Typical savings per year	Ratings after improvement	
		SAP rating	Environmental Impact
£4,000 - £6,000	£68	C 79	A 96
£3,500 - £5,500	£164	B 86	A 97
		0	0

Summary for Input Data



Property Reference	008517 - HT - Danbury - SEMI		Issued on Date	16/03/2023
Assessment Reference	As Designed - As	Prop Type Ref	HT - Danbury - SEMI	
Property	Plot , Land Nr Rectory Farm			

SAP Rating	79 C	DER	5.32	TER	11.70
Environmental	96 A	% DER < TER			54.53
CO ₂ Emissions (t/year)	0.38	DFEE	34.54	TFEE	36.39
Compliance Check	See BREL	% DFEE < TFEE			5.06
% DPER < TPER	8.26	DPER	56.12	TPER	61.17

Assessor Details	Mr. Benjamin Wood	Assessor ID	P717-0001
Client	Persimmon Homes Severn Valley , null		

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East
Property Tenure	ND
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	House, Semi-Detached
2.0 Number of Storeys	2
3.0 Date Built	2023
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation

7.0 Electricity Tariff	Standard
Smart electricity meter fitted	No
Smart gas meter fitted	No

7.0 Measurements		Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	Ground floor:	17.37 m	37.03 m ²	2.33 m
	1st Storey:	17.37 m	37.03 m ²	2.57 m

8.0 Living Area	17.72	m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	85.11	71.83	0.00	None	13.28	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	36.93		None

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Plasterboard on timber frame	9.00	54.94
First Floor	Plasterboard on timber frame	9.00	111.13

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Insulated Plane	External Plane	Plasterboard, insulated at ceiling level	0.09	9.00	37.03	0.00	None	0.00	Enter Gross Area	0.00

Description	Storey	Construction	Area (m ²)
Ground Floor	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	37.03

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	37.03

Summary for Input Data



11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
First Floor		Plasterboard ceiling, carpeted chipboard floor	9.00	37.03

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Solid Doors	Manufacturer	Solid Door							1.10
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Patio Doors	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Door	Solid Doors	External Wall	East	2.15	
Front Windows	Windows	External Wall	East	3.79	
RH Windows	Windows	External Wall	North	0.60	
Rear Windows	Windows	External Wall	West	3.65	
Rear Patio Doors	Patio Doors	External Wall	West	3.09	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	9.44	0.08	0.08	No
E3 Sill	Independently assessed	6.94	0.03	0.03	No
E4 Jamb	Independently assessed	26.40	0.02	0.02	No
E5 Ground floor (normal)	Independently assessed	17.37	0.09	0.09	No
E6 Intermediate floor within a dwelling	Independently assessed	17.37	0.03	0.03	No
E10 Eaves (insulation at ceiling level)	Independently assessed	9.83	0.04	0.04	No
E12 Gable (insulation at ceiling level)	Independently assessed	7.54	0.04	0.04	No
E16 Corner (normal)	Independently assessed	9.80	0.05	0.05	No
E18 Party wall between dwellings	Independently assessed	9.80	-0.00	-0.00	No
P1 Party wall - Ground floor	Independently assessed	7.54	0.03	0.03	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	7.54	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	7.54	0.02	0.02	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

Approved Installation

Mechanical Ventilation data Type

Type

MV Reference Number

Duct Type

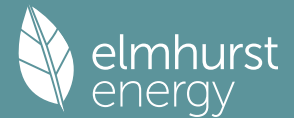
Wet Rooms

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.13	In Room Fan	0
	Kitchen	
0.11	In Room Fan Other	2
	Wet Room	
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other	0
	Wet Room	
0.10	Through Wall Fan	1
	Kitchen	
0.10	Through Wall Fan	1
	Other Wet Room	

20.0 Fans, Open Fireplaces, Flues

Summary for Input Data



21.0 Fixed Cooling System

22.0 Lighting

No Fixed Lighting

Name	Efficacy	Power	Capacity	Count
Downlights	800.00	28	22400	8
Spotlights	90.00	9	810	8

24.0 Main Heating 1

Percentage of Heat %

Database Ref. No.

Fuel Type

In Winter

In Summer

Model Name

Manufacturer

System Type

Controls SAP Code

PCDF Controls

Is MHS Pumped

Heating Pump Age

Heat Emitter

Flow Temperature

Flow Temperature Value

25.0 Main Heating 2

26.0 Heat Networks

Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1									
Heat source 2									
Heat source 3									
Heat source 4									
Heat source 5									

28.0 Water Heating

Water Heating

SAP Code

Flue Gas Heat Recovery System

Waste Water Heat Recovery Instantaneous System 1

Waste Water Heat Recovery Instantaneous System 2

Waste Water Heat Recovery Storage System

Solar Panel

Water use <= 125 litres/person/day

Cold Water Source

Bath Count

Immersion Only Heating Hot Water

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
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28.3 Waste Water Heat Recovery System

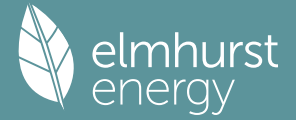
29.0 Hot Water Cylinder

Cylinder Stat

Cylinder In Heated Space

Independent Time Control

Summary for Input Data



Insulation Type	Measured Loss	
Cylinder Volume	150.00	L
Loss	1.23	kWh/day
In Airing Cupboard	No	

31.0 Thermal Store

Recommendations

Lower cost measures
None

Further measures to achieve even higher standards

Typical Cost	Typical savings per year	Ratings after improvement	
		SAP rating	Environmental Impact
£4,000 - £6,000	£65	B 81	A 96
£3,500 - £5,500	£154	B 88	A 97
		0	0

Summary for Input Data



Property Reference	008517 - HT - Delamare - Det		Issued on Date	16/03/2023
Assessment Reference	As Designed - As	Prop Type Ref	HT - Delamare - Det	
Property	Plot , Land Nr Rectory Farm , Bamber Bridge			

SAP Rating	76 C	DER	5.53	TER	11.70
Environmental	95 A	% DER < TER			52.74
CO ₂ Emissions (t/year)	0.47	DFEE	41.76	TFEE	44.56
Compliance Check	See BREL	% DFEE < TFEE			6.28
% DPER < TPER	5.23	DPER	58.08	TPER	61.29

Assessor Details	Mr. Benjamin Wood	Assessor ID	P717-0001
Client	Persimmon Homes Severn Valley , null		

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East
Property Tenure	1
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	House, Detached
2.0 Number of Storeys	2
3.0 Date Built	2021
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation

7.0 Electricity Tariff	Standard
Smart electricity meter fitted	No
Smart gas meter fitted	No

7.0 Measurements	Heat Loss Perimeter	Internal Floor Area	Unheated Space Floor Area	Average Storey Height
Ground floor:	32.19 m	36.60 m ²	17.37 m ²	2.55 m
1st Storey:	29.73 m	53.97 m ²		2.33 m

8.0 Living Area	13.70	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall	Wall to Garage	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	127.75	111.28	0.00	None	16.47	Enter Gross Area
		Timber Frame	Timber framed wall (two layers of plasterboard)	0.26	18.00	23.45	23.45	0.35	Garage Single 1 Outside	0.00	Enter Gross Area

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	First Floor	Plasterboard on timber frame	9.00	56.10
		Plasterboard on timber frame	9.00	133.67

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Insulated Plane	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	55.78	0.00	None	0.00	Enter Gross Area	0.00	

10.2 Internal Ceilings	Description	Storey	Construction	Area (m ²)
Internal Ceiling	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	34.79	

11.0 Heat Loss Floors	Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Floor above Garage	Ground Floor - Solid Exposed Floor - Timber	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	36.60
				Timber exposed floor, insulation between joists	0.15	Garage Single 1 Outside	0.35	20.00	19.18

11.2 Internal Floors

Summary for Input Data



Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor		Plasterboard ceiling, carpeted chipboard floor	9.00	34.79

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Solid Door	Manufacturer	Solid Door							1.10
Patio Doors	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Windows	Windows	External Wall	East	4.67	
Front Door	Solid Door	External Wall	East	2.15	
Rear Windows	Windows	External Wall	West	5.11	
Patio Door	Patio Doors	External Wall	West	3.09	
RH Windows	Windows	External Wall	North	0.97	
LH Window	Windows	External Wall	South	0.48	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E1 Steel lintel with perforated steel base plate	Independently assessed	12.28	0.08	0.08	No
E3 Sill	Independently assessed	9.79	0.03	0.03	No
E4 Jamb	Independently assessed	33.00	0.02	0.02	No
E5 Ground floor (normal)	Independently assessed	22.98	0.09	0.09	No
E5 Ground floor (normal)	Independently assessed	9.21	0.09	0.09	No
E20 Exposed floor (normal)	Independently assessed	9.21	0.08	0.08	No
E21 Exposed floor (inverted)	Independently assessed	9.21	-0.01	-0.01	No
E6 Intermediate floor within a dwelling	Independently assessed	19.05	0.00	0.00	No
E10 Eaves (insulation at ceiling level)	Independently assessed	14.08	0.04	0.04	No
E24 Eaves (insulation at ceiling level - inverted)	Table K1 - Default	1.47	0.15	0.15	No
E12 Gable (insulation at ceiling level)	Independently assessed	19.58	0.04	0.04	No
E16 Corner (normal)	Independently assessed	19.50	0.05	0.05	No
E16 Corner (normal)	Table K1 - Default	5.09	0.18	0.18	No
E17 Corner (inverted – internal area greater than external area)	Independently assessed	2.55	-0.04	-0.04	No
E17 Corner (inverted – internal area greater than external area)	Table K1 - Default	2.55	0.00	-0.09	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

Approved Installation

Mechanical Ventilation data Type

Type

MV Reference Number

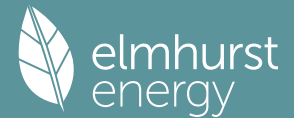
Duct Type

Wet Rooms

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.13	In Room Fan	0
	Kitchen	
0.11	In Room Fan Other	2
	Wet Room	
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other	0
	Wet Room	
0.10	Through Wall Fan	1
	Kitchen	
0.10	Through Wall Fan	1

Summary for Input Data



Other Wet Room

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

No

22.0 Lighting

No Fixed Lighting

No

Name	Efficacy	Power	Capacity	Count
Downlights	80.00	25	2000	9
Spotlights	90.00	9	810	8

24.0 Main Heating 1

Database

Percentage of Heat

100.00

%

Database Ref. No.

104568

Fuel Type

Electricity

In Winter

0.00

In Summer

0.00

Model Name

Ecodan 5.0 kW

Manufacturer

Mitsubishi Electric Europe B.V.

System Type

Heat Pump

Controls SAP Code

2207

PCDF Controls

0

Is MHS Pumped

Pump in heated space

Heating Pump Age

2013 or later

Heat Emitter

Radiators

Flow Temperature

Enter value

Flow Temperature Value

55.00

25.0 Main Heating 2

None

26.0 Heat Networks

None

Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1									
Heat source 2									
Heat source 3									
Heat source 4									
Heat source 5									

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

Cold Water Source

From mains

Bath Count

1

Immersion Only Heating Hot Water

Yes

28.1 Showers

Description

Shower Type

Flow Rate [l/min]

Rated Power [kW]

Connected

Connected To

28.3 Waste Water Heat Recovery System

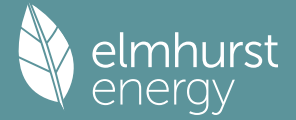
29.0 Hot Water Cylinder

Hot Water Cylinder

Cylinder Stat

Yes

Summary for Input Data



Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	150.00	L
Loss	1.23	kWh/day
In Airing Cupboard	No	

31.0 Thermal Store

Recommendations

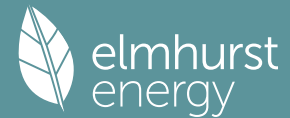
Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
	£4,000 - £6,000	£66	C 78	A 96
	£3,500 - £5,500	£168	B 85	A 97
			0	0

Summary for Input Data



Property Reference	008517 - HT - Saunton - SEMI		Issued on Date	23/03/2023
Assessment Reference	As Designed - As	Prop Type Ref	HT - Saunton - SEMI	
Property	Plot , Land Nr Rectory Farm			

SAP Rating	78 C	DER	4.92	TER	11.04
Environmental	96 A	% DER < TER			55.43
CO ₂ Emissions (t/year)	0.45	DFEE	34.88	TFEE	35.17
Compliance Check	See BREL	% DFEE < TFEE			0.85
% DPER < TPER	10.31	DPER	51.83	TPER	57.79

Assessor Details	Mr. Benjamin Wood	Assessor ID	P717-0001
Client	Persimmon Severn Valley, Persimmon Severn Valley		

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East
Property Tenure	ND
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	House, Semi-Detached
2.0 Number of Storeys	3
3.0 Date Built	2023
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation

7.0 Electricity Tariff	Standard
Smart electricity meter fitted	No
Smart gas meter fitted	No

7.0 Measurements	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	17.67 m	34.83 m ²	2.33 m
1st Storey:	16.20 m	32.75 m ²	2.57 m
2nd Storey:	16.20 m	27.72 m ²	2.33 m

8.0 Living Area	15.18	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	105.75	93.42	0.00	None	12.33	Enter Gross Area
	Dormer Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.44	9.00	5.78	4.34	0.00	None	1.44	Enter Gross Area
	Wall to Roof Void	Timber Frame	Timber framed wall (one layer of plasterboard)	0.11	9.00	7.76	7.76	0.00	None	0.00	Enter Gross Area

9.1 Party Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
	Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	65.65		None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Ground Floor	Plasterboard on timber frame	9.00	52.66
	First Floor	Plasterboard on timber frame	9.00	57.05
	Second Floor	Plasterboard on timber frame	9.00	56.25

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
	Insulated Slope	External Slope Roof	Plasterboard, insulated slope	0.15	9.00	15.64	1.35	None	0.00	Enter Gross Area	1.35
	1st Floor Sheltered Ceiling	External Slope Roof	Plasterboard, insulated slope	0.11	9.00	5.03	0.00	None	0.00	Enter Gross Area	0.00
	2nd Floor Sheltered Ceiling	External Slope Roof	Plasterboard, insulated slope	0.11	9.00	14.40	0.00	None	0.00	Enter Gross Area	0.00
	Dormer Flat Roof	External Flat	Plasterboard, insulated flat roof	0.33	9.00	2.25	0.00	None	0.00	Enter Gross Area	0.00

Summary for Input Data



Insulated Plane	Roof	External Plane	Plasterboard, insulated at ceiling level	0.09	9.00	2.09	0.00	None	0.00	Area	0.00
	Roof									Enter Gross Area	

10.2 Internal Ceilings

Description	Storey	Construction	Area (m ²)
Ground Floor	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	32.75
First Floor	+1	Plasterboard ceiling, carpeted chipboard floor	27.72

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	34.83

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
First Floor		Plasterboard ceiling, carpeted chipboard floor	9.00	32.75
Second Floor		Plasterboard ceiling, carpeted chipboard floor	9.00	27.72

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Solid Doors	Manufacturer	Solid Door							1.10
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Patio Doors	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Rooflights	Manufacturer	Roof Window	Double Low-E Soft 0.05			0.63		0.70	1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Door	Solid Doors	External Wall	East	2.13	
Front Windows	Windows	External Wall	East	3.38	
LH Windows	Windows	External Wall	South	0.60	
Rear Windows	Windows	External Wall	West	3.36	
Rear Patio Doors	Patio Doors	External Wall	West	2.86	
Front Windows	Windows	Dormer Wall	East	1.44	
Rear RL	Rooflights	Insulated Slope	West	1.35	45

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	8.62	0.08	0.08	No
E3 Sill	Independently assessed	6.25	0.03	0.03	No
E4 Jamb	Independently assessed	22.20	0.02	0.02	No
E5 Ground floor (normal)	Independently assessed	17.67	0.09	0.09	No
E6 Intermediate floor within a dwelling	Independently assessed	30.98	0.03	0.03	No
E24 Eaves (insulation at ceiling level - inverted)	Table K1 - Default	1.43	0.15	0.15	No
E11 Eaves (insulation at rafter level)	Independently assessed	7.71	0.02	0.02	No
E13 Gable (insulation at rafter level)	Independently assessed	12.02	-0.00	-0.00	No
E16 Corner (normal)	Independently assessed	12.73	0.05	0.05	No
E16 Corner (normal)	Table K1 - Default	3.76	0.18	0.18	No
E17 Corner (inverted - internal area greater than external area)	Independently assessed	2.33	-0.04	-0.04	No
E18 Party wall between dwellings	Independently assessed	10.40	-0.00	-0.00	No
P1 Party wall - Ground floor	Independently assessed	9.96	0.03	0.03	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	16.99	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	1.46	0.02	0.02	No
P5 Party wall - Roof (insulation at rafter level)	Independently assessed	12.02	0.09	0.09	No
R1 Head of roof window	Independently assessed	2.34	0.06	0.06	No
R2 Sill of roof window	Independently assessed	2.34	0.06	0.06	No
R3 Jamb of roof window	Independently assessed	4.76	0.06	0.06	No
R4 Ridge (vaulted ceiling)	Table K1 - Default	3.85	0.12	0.12	No
R7 Flat ceiling (inverted)	Independently assessed	7.71	-0.02	-0.02	No
R9 Roof to wall (flat ceiling)	Independently assessed	4.96	0.02	0.02	No
E10 Eaves (insulation at ceiling level)	Independently assessed	1.44	0.04	0.04	No
E12 Gable (insulation at ceiling level)	Independently assessed	1.47	0.04	0.04	No

Y-value W/m²K

18.0 Pressure Testing

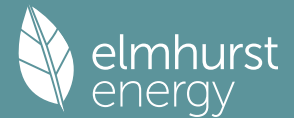
Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

19.0 Mechanical Ventilation

Mechanical Ventilation

Summary for Input Data



Mechanical Ventilation System Present	Yes
Approved Installation	No
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500787
Duct Type	Flexible
Wet Rooms	4

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.13	In Room Fan Kitchen	0
0.11	In Room Fan Other Wet Room	2
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.10	Through Wall Fan Kitchen	1
0.10	Through Wall Fan Other Wet Room	1

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

No

22.0 Lighting

No Fixed Lighting

No

Name	Efficacy	Power	Capacity	Count
Downlights	80.00	28	2240	10
Spotlights	90.00	9	810	8

24.0 Main Heating 1

Database	
Percentage of Heat	100.00 %
Database Ref. No.	104568
Fuel Type	Electricity
In Winter	0.00
In Summer	0.00
Model Name	Ecodan 5.0 kW
Manufacturer	Mitsubishi Electric Europe B.V.
System Type	Heat Pump
Controls SAP Code	2207
PCDF Controls	0
Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators
Flow Temperature	Enter value
Flow Temperature Value	55.00

25.0 Main Heating 2

None

26.0 Heat Networks

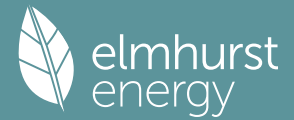
None

Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1									
Heat source 2									
Heat source 3									
Heat source 4									
Heat source 5									

28.0 Water Heating

Water Heating	Main Heating 1
SAP Code	901

Summary for Input Data



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
Cold Water Source	From mains
Bath Count	1
Immersion Only Heating Hot Water	No

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
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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	150.00			L	
Loss	1.23			kWh/day	
In Airing Cupboard	No				

31.0 Thermal Store

None

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

Typical Cost	Typical savings per year	Ratings after improvement	
		SAP rating	Environmental Impact
£4,000 - £6,000	£67	B 81	A 96
£3,500 - £5,500	£164	B 87	A 97
		0	0

Summary for Input Data



Property Reference	008517 - HT - Sherwood - DET		Issued on Date	16/03/2023
Assessment Reference	As Designed	Prop Type Ref	HT - Sherwood - DET	
Property	Plot , Land Nr Rectory Farm			

SAP Rating	77 C	DER	5.33	TER	11.28
Environmental	95 A	% DER < TER			52.75
CO ₂ Emissions (t/year)	0.45	DFEE	38.61	TFEE	39.01
Compliance Check	See BREL	% DFEE < TFEE			1.02
% DPER < TPER	4.72	DPER	56.10	TPER	58.88

Assessor Details	Mr. Benjamin Wood	Assessor ID	P717-0001
Client	Persimmon Homes Severn Valley , null		

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East
Property Tenure	ND
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	House, Detached
2.0 Number of Storeys	2
3.0 Date Built	2022
4.0 Sheltered Sides	3
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation

7.0 Electricity Tariff	Standard
Smart electricity meter fitted	No
Smart gas meter fitted	No

7.0 Measurements		Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	Ground floor:	27.90 m	44.20 m ²	2.33 m
	1st Storey:	27.90 m	44.20 m ²	2.57 m

8.0 Living Area	13.45	m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	136.61	119.59	0.00	None	17.02	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber frame with/without sheathing board	0.00	20.00	66.08		None

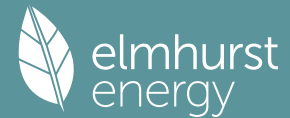
Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Plasterboard on timber frame	9.00	79.78
First Floor	Plasterboard on timber frame	9.00	120.12

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Insulated Plane	External Plane	Plasterboard, insulated at ceiling level	0.09	9.00	44.20	0.00	None	0.00	Enter Gross Area	0.00

Description	Storey	Construction	Area (m ²)
Ground Floor	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	44.20

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	44.20

Summary for Input Data



11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
First Floor		Plasterboard ceiling, carpeted chipboard floor	9.00	44.20

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Solid Doors	Manufacturer	Solid Door							1.20
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Patio Doors	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Half-Glazed Doors	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.60

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Door	Solid Doors	External Wall	East	2.15	
Front Windows	Windows	External Wall	East	5.49	
Rear Windows	Windows	External Wall	West	3.92	
Rear Patio Doors	Patio Doors	External Wall	West	3.80	
LH Windows	Windows	External Wall	South	0.83	
RH Windows	Windows	External Wall	North	0.83	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	12.27	0.08	0.08	No
E3 Sill	Independently assessed	9.44	0.03	0.03	No
E4 Jamb	Independently assessed	30.00	0.02	0.02	No
E5 Ground floor (normal)	Independently assessed	27.90	0.09	0.09	No
E6 Intermediate floor within a dwelling	Independently assessed	27.90	0.03	0.03	No
E10 Eaves (insulation at ceiling level)	Independently assessed	10.01	0.04	0.04	No
E12 Gable (insulation at ceiling level)	Independently assessed	17.89	0.04	0.04	No
E16 Corner (normal)	Independently assessed	24.48	0.05	0.05	No
E17 Corner (inverted – internal area greater than external area)	Independently assessed	4.90	-0.04	-0.04	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

Approved Installation

Mechanical Ventilation data Type

Type

MV Reference Number

Duct Type

Wet Rooms

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.13	In Room Fan	0
	Kitchen	
0.11	In Room Fan Other	2
	Wet Room	
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other	0
	Wet Room	
0.10	Through Wall Fan	1
	Kitchen	
0.10	Through Wall Fan	2
	Other Wet Room	

20.0 Fans, Open Fireplaces, Flues

Summary for Input Data



21.0 Fixed Cooling System

No

22.0 Lighting

No Fixed Lighting

No

Name	Efficacy	Power	Capacity	Count
Downlights	80.00	28	2240	8
Spotlights	90.00	9	810	8

24.0 Main Heating 1

Database

Percentage of Heat

100.00

%

Database Ref. No.

104568

Fuel Type

Electricity

In Winter

0.00

In Summer

0.00

Model Name

Ecodan 5.0 kW

Manufacturer

Mitsubishi Electric Europe B.V.

System Type

Heat Pump

Controls SAP Code

2207

PCDF Controls

0

Is MHS Pumped

Pump in heated space

Heating Pump Age

2013 or later

Heat Emitter

Radiators

Flow Temperature

Enter value

Flow Temperature Value

55.00

25.0 Main Heating 2

None

26.0 Heat Networks

None

Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1									
Heat source 2									
Heat source 3									
Heat source 4									
Heat source 5									

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

Cold Water Source

From mains

Bath Count

1

Immersion Only Heating Hot Water

Yes

28.1 Showers

Description

Shower Type

Flow Rate [l/min]

Rated Power [kW]

Connected

Connected To

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Hot Water Cylinder

Cylinder Stat

Yes

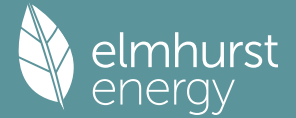
Cylinder In Heated Space

Yes

Independent Time Control

Yes

Summary for Input Data



Insulation Type	Measured Loss	
Cylinder Volume	150.00	L
Loss	1.23	kWh/day
In Airing Cupboard	No	

31.0 Thermal Store

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

Typical Cost	Typical savings per year	Ratings after improvement	
		SAP rating	Environmental Impact
£4,000 - £6,000	£67	C 80	A 96
£3,500 - £5,500	£162	B 86	A 97
		0	0

Summary for Input Data



Property Reference	008517 - HT - Whinfell - Semi		Issued on Date	23/03/2023
Assessment Reference	As Designed	Prop Type Ref	HT - Whinfell - Semi	
Property	Plot , Land Nr Rectory Farm			

SAP Rating	80 C	DER	4.46	TER	9.98
Environmental	96 A	% DER < TER			55.31
CO ₂ Emissions (t/year)	0.47	DFEE	32.69	TFEE	33.45
Compliance Check	See BREL	% DFEE < TFEE			2.25
% DPER < TPER	9.97	DPER	46.90	TPER	52.09

Assessor Details	Mr. Benjamin Wood	Assessor ID	P717-0001
Client	Persimmon Severn Valley, Persimmon Severn Valley		

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East
Property Tenure	ND
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	House, End-Terrace
2.0 Number of Storeys	3
3.0 Date Built	2022
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation

7.0 Electricity Tariff	Standard
Smart electricity meter fitted	No
Smart gas meter fitted	No

7.0 Measurements	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	18.05 m	40.08 m ²	2.31 m
1st Storey:	18.05 m	40.08 m ²	2.55 m
2nd Storey:	18.05 m	31.03 m ²	2.10 m

8.0 Living Area	13.85	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	107.92	93.22	0.00	None	14.70	Enter Gross Area
	Wall to Roof Void	Timber Frame	Timber framed wall (one layer of plasterboard)	0.11	9.00	14.61	14.61	0.00	None	0.00	Enter Gross Area
	Dormer Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.44	9.00	3.51	2.42	0.00	None	1.09	Enter Gross Area

9.1 Party Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
	Party Wall	Filled Cavity with Edge Sealing	Plasterboard on dabs mounted on cement render on both sides, AAC blocks, cavity	0.00	45.00	55.94		None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Ground Floor	Plasterboard on timber frame	9.00	76.83
	First Floor	Plasterboard on timber frame	9.00	102.15
	Second Floor	Plasterboard on timber frame	9.00	42.79

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
	Insulated Slope	External Slope Roof	Plasterboard, insulated slope	0.15	9.00	19.43	0.00	None	0.00	Enter Gross Area	0.00
	1st Sheltered Ceiling	External Plane Roof	Plasterboard, insulated at ceiling level	0.11	9.00	9.05	1.08	None	0.00	Enter Gross Area	1.08
	2nd Sheltered Ceiling	External Plane Roof	Plasterboard, insulated at ceiling level	0.11	9.00	15.57	0.00	None	0.00	Enter Gross Area	0.00
	Dormer Flat Roof	External Flat	Plasterboard, insulated flat roof	0.33	9.00	1.73	0.00	None	0.00	Enter Gross Area	0.00

Summary for Input Data



Roof

Area

10.2 Internal Ceilings

Description	Storey	Construction	Area (m ²)
Ground Floor	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	40.08
First Floor	+1	Plasterboard ceiling, carpeted chipboard floor	31.03

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	40.08

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
First Floor		Plasterboard ceiling, carpeted chipboard floor	9.00	40.08
Second Floor		Plasterboard ceiling, carpeted chipboard floor	9.00	31.03

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Entrance Door	Manufacturer	Solid Door							1.10
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
French Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Roof Window	Manufacturer	Roof Window	Double Low-E Soft 0.05			0.63		0.70	1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Door	Entrance Door	External Wall	East	2.15	
Front Windows	Windows	External Wall	East	4.49	
Rear Windows	Windows	External Wall	West	4.26	
Rear Patio Door	French Door	External Wall	West	3.80	
Front Window	Windows	Dormer Wall	East	1.09	
Rear Roof Window	Roof Window	1st Sheltered Ceiling	West	1.08	45

14.0 Conservatory

None

15.0 Draught Proofing

100 %

16.0 Draught Lobby

No

17.0 Thermal Bridging

Calculate Bridges

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E3 Sill	Independently assessed	6.81	0.02	0.02	No
E2 Other lintels (including other steel lintels)	Independently assessed	9.64	0.08	0.08	No
E4 Jamb	Independently assessed	23.40	0.02	0.02	No
E5 Ground floor (normal)	Independently assessed	18.05	0.09	0.09	No
E6 Intermediate floor within a dwelling	Independently assessed	36.10	0.03	0.03	No
E11 Eaves (insulation at rafter level)	Independently assessed	10.16	0.02	0.02	No
E13 Gable (insulation at rafter level)	Independently assessed	11.16	-0.00	-0.00	No
E16 Corner (normal)	Independently assessed	10.23	0.05	0.05	No
E17 Corner (inverted – internal area greater than external area)	Independently assessed	3.39	-0.04	-0.04	No
R1 Head of roof window	Independently assessed	2.01	0.06	0.06	No
R2 Sill of roof window	Independently assessed	2.01	0.06	0.06	No
R3 Jamb of roof window	Independently assessed	6.31	0.06	0.06	No
R4 Ridge (vaulted ceiling)	Table K1 - Default	5.08	0.12	0.12	No
E18 Party wall between dwellings	Independently assessed	10.23	-0.00	-0.00	No
P1 Party wall - Ground floor	Independently assessed	7.89	0.03	0.03	No
P2 Party wall - Intermediate floor within a dwelling	Gov Approved Scheme	15.78	0.00	0.00	No
P5 Party wall - Roof (insulation at rafter level)	Independently assessed	11.16	0.01	0.01	No
R7 Flat ceiling (inverted)	Independently assessed	6.83	-0.02	-0.02	No
R9 Roof to wall (flat ceiling)	Independently assessed	4.41	0.02	0.02	No
E16 Corner (normal)	Table K1 - Default	3.78	0.18	0.18	No

Y-value 0.03 W/m²K

18.0 Pressure Testing

Designed AP₅₀ 4.50 m³/(h.m²) @ 50 Pa

Test Method Blower Door

19.0 Mechanical Ventilation

Mechanical Ventilation

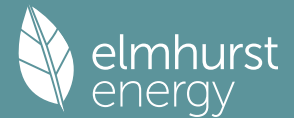
Mechanical Ventilation System Present Yes

Approved Installation Yes

Mechanical Ventilation data Type Database

Type Mechanical extract ventilation - decentralised

Summary for Input Data



MV Reference Number	500787
Duct Type	Flexible
Wet Rooms	4

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.13	In Room Fan Kitchen	0
0.11	In Room Fan Other Wet Room	1
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.10	Through Wall Fan Kitchen	1
0.10	Through Wall Fan Other Wet Room	2

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

22.0 Lighting

No Fixed Lighting	<input type="text" value="No"/>				
Name	Efficacy	Power	Capacity	Count	
Downlights	80.00	28	2240	9	
Spotlights	90.00	9	810	8	

24.0 Main Heating 1

Database	<input type="text" value="Database"/>	
Percentage of Heat	<input type="text" value="100.00"/>	%
Database Ref. No.	<input type="text" value="104568"/>	
Fuel Type	<input type="text" value="Electricity"/>	
In Winter	<input type="text" value="0.00"/>	
In Summer	<input type="text" value="0.00"/>	
Model Name	<input type="text" value="Ecodan 5.0 kW"/>	
Manufacturer	<input type="text" value="Mitsubishi Electric Europe B.V."/>	
System Type	<input type="text" value="Heat Pump"/>	
Controls SAP Code	<input type="text" value="2207"/>	
Is MHS Pumped	<input type="text" value="Pump in heated space"/>	
Heating Pump Age	<input type="text" value="2013 or later"/>	
Heat Emitter	<input type="text" value="Radiators"/>	
Flow Temperature	<input type="text" value="Enter value"/>	
Flow Temperature Value	<input type="text" value="55.00"/>	

25.0 Main Heating 2

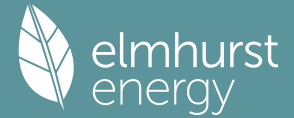
26.0 Heat Networks

28.0 Water Heating

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

28.1 Showers

Summary for Input Data



Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To						
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	150.00				L						
Loss	1.23				kWh/day						
Pipes insulation	Fully insulated primary pipework										
In Airing Cupboard	No										
31.0 Thermal Store											
None											
34.0 Small-scale Hydro											
None											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

Typical Cost	Typical savings per year	Ratings after improvement	
		SAP rating	Environmental Impact
£4,000 - £6,000	£68	B 82	A 96
£3,500 - £5,500	£169	B 87	A 97
		0	0

Summary for Input Data



Property Reference	008517 - HT - Whiteleaf - DET		Issued on Date	16/03/2023
Assessment Reference	As Designed - As	Prop Type Ref	HT - Whiteleaf - DET	
Property	Plot , Land Nr Rectory Farm			

SAP Rating	79 C	DER	4.44	TER	9.89
Environmental	96 A	% DER < TER			55.11
CO ₂ Emissions (t/year)	0.49	DFEE	38.10	TFEE	38.92
Compliance Check	See BREL	% DFEE < TFEE			2.10
% DPER < TPER	9.50	DPER	46.65	TPER	51.55

Assessor Details	Mr. Benjamin Wood	Assessor ID	P717-0001
Client	Persimmon Homes Severn Valley , null		

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East
Property Tenure	ND
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	House, Detached
2.0 Number of Storeys	2
3.0 Date Built	2023
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation

7.0 Electricity Tariff	Standard
Smart electricity meter fitted	No
Smart gas meter fitted	No

7.0 Measurements		Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	Ground floor:	30.37 m	57.58 m ²	2.33 m
	1st Storey:	30.37 m	57.58 m ²	2.57 m

8.0 Living Area	13.30	m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	148.71	124.25	0.00	None	24.46	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber frame with/without sheathing board	0.00	20.00	66.08		None

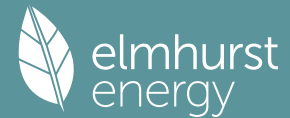
Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Plasterboard on timber frame	9.00	112.31
First Floor	Plasterboard on timber frame	9.00	164.84

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Insulated Plane	External Plane	Plasterboard, insulated at ceiling level	0.09	9.00	57.58	0.00	None	0.00	Enter Gross Area	0.00

Description	Storey	Construction	Area (m ²)
Ground Floor	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	57.58

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	57.58

Summary for Input Data



11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
First Floor		Plasterboard ceiling, carpeted chipboard floor	9.00	57.58

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Solid Doors	Manufacturer	Solid Door							1.10
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Patio Doors	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.46			1.30
Half-Glazed Doors	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.10

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Door	Solid Doors	External Wall	East	2.15	
Front Windows	Windows	External Wall	East	7.57	
Rear Windows	Windows	External Wall	West	4.52	
Rear Patio Doors	Patio Doors	External Wall	West	3.80	
Rear Door	Half-Glazed Doors	External Wall	West	2.15	
LH Windows	Windows	External Wall	South	0.60	
RH Windows	Windows	External Wall	North	3.67	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	17.03	0.08	0.08	No
E3 Sill	Independently assessed	13.18	0.03	0.03	No
E4 Jamb	Independently assessed	43.80	0.02	0.02	No
E5 Ground floor (normal)	Independently assessed	30.37	0.09	0.09	No
E6 Intermediate floor within a dwelling	Independently assessed	30.37	0.03	0.03	No
E10 Eaves (insulation at ceiling level)	Independently assessed	15.75	0.04	0.04	No
E12 Gable (insulation at ceiling level)	Independently assessed	14.62	0.04	0.04	No
E16 Corner (normal)	Independently assessed	19.58	0.05	0.05	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

Approved Installation

Mechanical Ventilation data Type

Type

MV Reference Number

Duct Type

Wet Rooms

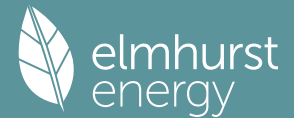
19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.13	In Room Fan Kitchen	0
0.11	In Room Fan Other Wet Room	2
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.10	Through Wall Fan Kitchen	1
0.10	Through Wall Fan Other Wet Room	2

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

Summary for Input Data



22.0 Lighting

No Fixed Lighting	No				
	Name	Efficacy	Power	Capacity	Count
	Downlights	80.00	28	2240	10
	Spotlights	90.00	9	810	8

24.0 Main Heating 1

Database	Database
Percentage of Heat	100.00 %
Database Ref. No.	104640
Fuel Type	Electricity
In Winter	0.00
In Summer	0.00
Model Name	Ecodan 8.5 kW
Manufacturer	Mitsubishi Electric Europe B.V.
System Type	Heat Pump
Controls SAP Code	2207
PCDF Controls	0
Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators
Flow Temperature	Enter value
Flow Temperature Value	55.00

25.0 Main Heating 2

None

26.0 Heat Networks

None

	Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1										
Heat source 2										
Heat source 3										
Heat source 4										
Heat source 5										

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
Cold Water Source	From mains
Bath Count	1
Immersion Only Heating Hot Water	Yes

28.1 Showers

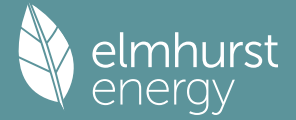
Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
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28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Hot Water Cylinder	Hot Water Cylinder
Cylinder Stat	Yes
Cylinder In Heated Space	Yes
Independent Time Control	Yes
Insulation Type	Measured Loss

Summary for Input Data



Cylinder Volume L
 Loss kWh/day
 In Airing Cupboard

31.0 Thermal Store

34.0 Small-scale Hydro

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Recommendations

Lower cost measures
None

Further measures to achieve even higher standards

Typical Cost	Typical savings per year	Ratings after improvement	
		SAP rating	Environmental Impact
£4,000 - £6,000	£67	B 81	A 96
£3,500 - £5,500	£170	B 87	A 97
		0	0