Energy & Sustainability Statement

Former SSE Depot

Bartons Road

Havant

Hampshire

Stonebond Properties (Guildford) Limited

Report No: PA-ES-SB-BR-25-01

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1. PROJECT DETAILS

Type of Application	Full Planning Application
Project Name	Former SSE Depot, Bartons Road, Havant
Project Address	Former SSE Depot, Bartons Road, Havant, Hampshire
Project Description	Erection of 90 dwellings with associated landscaping, parking and improved access.
Applicant	Stonebond Properties (Guildford) Limited
Applicant's Address	1 Bishops Wharf, Walnut Tree Close, Guildford, Surrey, GU1 4UP
Architect	Edgingtons Architects
Architect's Address	Meridian House, 2 Russell Street, Windsor, Berkshire, SL4 1HQ
Report Prepared by	Mike Hassett
Author Position	Sustainability Consultant
Company	Abbey Consultants (Southern) Ltd
Address	2 Dronken House, 43A High Street, Kings Langley, WD4 8FG
Contact No	01923 274 427
Web Address	www.abbeyconsultants.co.uk

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01	31/07/25	For Issue	MH
02			
03			

2. EXECUTIVE SUMMARY

Introduction

This Energy & Sustainability Statement has been prepared by Abbey Consultants (Southern) Ltd on behalf of Stonebond Properties (Guildford) Limited (the 'Applicant' hereafter) to accompany the submission of a full planning application for the site located at Former SSE Depot, Bartons Road, Havant, Hampshire (hereafter 'the site').

The proposal encompasses:

"Erection of 90 dwellings with associated landscaping, parking and improved access."

The site is located within the administrative boundaries of Havant Borough Council and Hampshire County Council.

This report has been prepared in accordance with the requirements at both national and local level, as set out in the National Planning Policy Framework (2024) and Havant Borough Council's adopted Core Strategy (2011).

Havant Borough Council is in the process of developing a new Local Plan. The emerging Regulation 18 Local Plan was recently consulted upon between Tuesday 6th May and Tuesday July 1, 2025. The Local Plan is anticipated to set out the plans for Havant Borough Council up until 2043. As the draft Local Plan is yet to be adopted, it will have limited weight in the decision making of this application. However, the relevant draft policies will be referenced in the appropriate sections of this report.

The report outlines the key features and strategies that will be adopted by the development team to enhance the energy and sustainability performance of the proposed development.

Energy Strategy

The strategy for reducing energy use and associated carbon emissions through the design of the scheme follows the energy hierarchy of 'Be Lean', 'Be Clean and 'Be Green'.

The proposed development has been assessed using Elmhurst Energy's latest version of their Standard Assessment Procedure (SAP) software (Design SAP 10) which uses the SAP 10.2 methodology. This assessment has determined the Building Regulations Part L baseline, to which the scheme must comply with, and each stage of the energy hierarchy will be compared against.

Firstly, the energy demand is reduced at the 'Be Lean' stage of the energy hierarchy. This includes a set of energy efficiency measures, including the following:

- The thermal performance of the proposed fabric will exceed Part L (2021) minimum requirements in terms of U-values and air tightness.
- Orientation has been considered in the design of the façades to ensure energy use is balanced through daylight provision and thermal comfort.
- Where applicable, the detailed design will independently assess the thermal junctions to ensure insulation continuity for minimising thermal bridging.
- Solar control glass will be utilised to ensure solar gains are balanced to lower the heat demand but also assist in mitigating the risk of overheating.
- Light fittings of low energy types will be specified throughout the scheme.

The 'Be Clean' stage of the energy strategy explores the potential for a district heat network to serve this scheme. However, this development proposal is deemed unsuitable for this type of heat network. Alternatively, individual heating systems have been specified for the dwellings.

The 'Be Green' stage of the energy hierarchy introduces low carbon energy supply systems to the houses in the form of individual air source heat pumps. These will efficiently supply the houses with space heating and hot water. The apartments will also benefit from heat pump technology in the form of domestic hot water heat pump, which will serve the apartment as a low carbon solution to supplying hot water. Although the proposed heating system will rely on electricity to provide power for the heat pumps, it will support the shift towards carbon neutrality. This is due to

the ongoing decarbonisation of the electricity grid, meaning that grid electricity will eventually be generated solely through renewable sources. Therefore, this scheme will be less dependent on fossil fuels and will be future proofed against any future ban of gas heating.

The energy strategy also acknowledges the incoming Future Homes and Buildings Standard, however the details of this are yet to be finalised. When this scheme reaches detailed design stage, this energy strategy should be reviewed to ensure that the proposals make best use of the technology available at the time and are fully compliant with any updated regulatory requirements.

Although the specifications detailed herein form the basis of this energy strategy, the Developer does reserve the right to make appropriate alterations to the final specification when the scheme reaches detailed design. This may include a change of heating strategy to include gas boilers in lieu of air source heat pumps. Should this situation arise, then the gas boilers would be supplemented by PV panels as the chosen alternative renewable technology. In the case of there being any future alternations to this energy strategy the Developer is committed to, as a minimum, achieving compliance with all of the relevant adopted planning policies and the latest regulatory requirements. Details of the final energy strategy may be secured via the imposition of a planning condition if deemed necessary by the Local Planning Authority.

Carbon Reductions

Through implementation of the energy strategy, the table below details the regulated carbon dioxide emissions and savings that are anticipated at each stage of the energy hierarchy.

Table 1: Summary of CO_2 emissions savings

Stage of Energy Hierarchy	Regulated CO_2 Emissions (tonnes/year)
Total Part L 2021 Baseline	93.90
Total After 'Be Lean'	91.17
Total After 'Be Green'	33.11
Total Saving	**60.79**
Total Improvement	**65%**

After all of the measures in the energy strategy have been accounted for, the proposed development achieves an overall on-site reduction of 65% in regulated carbon dioxide emissions over Part L 2021. This equates to an annual saving of an estimated 60.79 tonnes in regulated CO_2 emissions. This is in line with the adopted planning policy requirements at both national and local level.

Sustainability Strategy

The proposed strategy in relation to sustainable design and construction is detailed in Section 11.

The key sustainability measures to be incorporated into the development proposals are summarised below:

- A commitment that the proposed water saving measures will keep the water usage of each dwelling to less than 110 litres per person per day. This is in line with the requirements of Havant Borough Council's Draft Policy 18.
- Electric Vehicle (EV) Charging Points to be included throughout the proposed development.
- A high quality construction and design specification will prioritise materials within 'A+', 'A' or 'B' ratings, and low embodied carbon materials selected wherever feasible using a whole life-cycle approach. Minimisation of waste and promotion of Circular Economy Measures into all aspects of design, construction and operation.

- A Travel Plan has been developed to promote active and sustainable transport modes.
- Ecology/Landscaping – Extensive planting is proposed throughout. A 10% net gain in biodiversity will be achieved through offsite measures.
- The drainage strategy utilises SuDS to help mitigate against any flood risk. The proposed SuDS features to be implemented on the proposed development are underground attenuation, permeable paving and discharge control (hydrobrake).
- Air quality has been assessed, and subject to appropriate mitigation measures, the overall effect with regard to air quality is considered 'not significant'.
- Noise pollution – A Noise Assessment has demonstrated that subject to relevant mitigation measures, the site is suitable for the proposed development in terms of noise levels.
- Details the measures that will be introduced to help mitigate against the risk of overheating to the dwellings in the summer months.

3. INTRODUCTION

This report has been prepared by Abbey Consultants (Southern) Ltd, a specialist environmental and energy consultancy on behalf of Stonebond Properties (Guildford) Limited in support of the full planning application of the proposed development at Former SSE Depot, Bartons Road, Havant, Hampshire located in Havant Borough Council.

The proposed development is described as:

"Erection of 90 dwellings with associated landscaping, parking and improved access."

Figure 1 details the proposed site layout.

Figure 1: Proposed Site Plan

The first section of this report details the proposed Energy Strategy for the development. This establishes a baseline assessment of the energy demands and associated CO_2 emissions for the development.

It then follows widely recognised Energy Hierarchy approach of Be Lean, Be Clean and Be Green to enable the maximum viable reductions in Regulated CO_2 emissions to be achieved.

1. Be Lean: use less energy and manage demand during operation through fabric and servicing improvements and the incorporation of flexibility measures;

2. Be Clean: exploit local energy resources and supply energy efficiently and cleanly by connecting to district heating networks;

3. Be Green: explore opportunities for renewable energy by producing, storing and/or using renewable energy on-site.

The second section of this report details the Sustainability Strategy. This covers the relevant aspects of sustainability relating to the Site, including mitigation measures against the effects of climate change.

The report takes into consideration the layout, use and requirements for the development to recommend an overarching strategy that integrates the most suitable technologies available that are commercially viable, whilst also achieving compliance with all of the planning requirements which are applicable to this development.

4. PLANNING POLICY

An effective planning system is required to contribute to achieving sustainable development.

Sustainable development is defined as having the following three overarching objectives which are interdependent and need to be pursued in mutually supportive ways: an economic objective, a social objective, and an environmental objective.

1. Economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
2. Social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
3. Environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

4.1. NATIONAL PLANNING POLICY FRAMEWORK (NPPF) 2024

The NPPF sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally-prepared plans can provide for housing and other development in a sustainable manner. Preparing and maintaining up-to-date plans should be seen as a priority in meeting this objective.

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

Paragraph 161. The planning system should support the transition to net zero by 2050 and take full account of all climate impacts including overheating, water scarcity, storm and flood risks and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.

Paragraph 162. Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating and drought from rising temperatures. Policies should support appropriate measures to ensure the future health and resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.

Paragraph 163. The need to mitigate and adapt to climate change should also be considered in preparing and assessing planning applications, taking into account the full range of potential climate change impacts.

Paragraph 164. New development should be planned for in ways that:

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

Paragraph 165. To help increase the use and supply of renewable and low carbon energy and heat, plans should:

a. provide a positive strategy for energy from these sources, that maximises the potential for suitable development, and their future re-powering and life extension, while ensuring that adverse impacts are addressed appropriately (including cumulative landscape and visual impacts);

b. consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and
c. identify opportunities for development to draw its energy supply from decentralised, renewable, or low carbon energy supply systems and for co-locating potential heat customers and suppliers.

Paragraph 166. In determining planning applications, local planning authorities should expect new development to:
a. comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and
b. take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.

Paragraph 167. Local planning authorities should also give significant weight to the need to support energy efficiency and low carbon heating improvements to existing buildings, both domestic and non-domestic (including through installation of heat pumps and solar panels where these do not already benefit from permitted development rights). Where the proposals would affect conservation areas, listed buildings or other relevant designated heritage assets, local planning authorities should also apply the policies set out in chapter 16 of this Framework.

Paragraph 168. When determining planning applications for renewable and low carbon developments and their associated infrastructure, local planning authorities should:
a. not require applicants to demonstrate the overall need for renewable or low carbon energy, and give significant weight to the benefits associated with renewable and low carbon energy generation and the proposal's contribution to a net zero future;
b. recognise that small-scale and community-led projects provide a valuable contribution to cutting greenhouse gas emissions;
c. in the case of applications for the repowering and life-extension of existing renewable sites, give significant weight to the benefits of utilising an established site.

Paragraph 169. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas.

4.2. Local Planning Policy

Havant Borough Council
Havant Borough Core Strategy
Adopted March 2011

Policy CS14: Efficient Use of Resources
Planning permission will be granted for development that:
1. Provides adequate land or funding for waste management infrastructure.
2. Locally contributes to the delivery of the PUSH target of 100MW of renewable energy by 2020 for the whole of the PUSH area. Major areas of development must ensure that their on-site renewable energy production is maximised and resource efficiency is maximised.
3. On completion, unless proven to be financially or technically unviable, meets the following standards:
   - Residential development – Level 3 of the Code for Sustainable Homes;
   - Multi-occupation homes and non-residential development over 500sqm – BREEAM standard 'very good'.
   - Improvements to these standards throughout the plan period will be encouraged.
   - Particular attention should be paid to water efficiency measures.
4. Allowable Solutions' may be used to achieve higher levels of carbon reduction where on-site proposals are not feasible or viable.

Havant Borough Council
Draft Building a Better Future Plan (Regulation 18)

The emerging Regulation 18 Local Plan was recently consulted upon between Tuesday 6th May and Tuesday July 1, 2025. The Local Plan is anticipated to set out the plans for Havant Borough Council up until 2043. As the draft local plan is yet to be adopted, it will have limited weight in the decision making of this application. However, the relevant draft policies have been detailed below.

Draft Policy 15: Low Carbon Development
All development must embed the Energy Hierarchy within the design of buildings by prioritising a fabric first approach, layout and landscaping in order to minimise energy demand for heating, lighting and cooling. All development must take opportunities to reduce the embodied carbon content through the careful choice, use and sourcing of materials. A Sustainability Statement will be required to be submitted which demonstrates how these measures have been incorporated.

All development will be expected to achieve the relevant minimum standards set out below.

Residential development
Planning permission for new dwellings (including replacement dwellings) will be granted where:

a) The principles of Passivhaus design (solar gain, natural ventilation or ventilation with heat recovery) and fabric performance have been incorporated into the layout and design;
b) The predicted space heating demand of the homes is less than 30 kWh/m2 /year;
c) The total energy consumption of the building(s) is less than 40 kWh/m2/year; and
d) Remaining energy demand is met through on-site renewable energy generation, with any remainder being addressed through the carbon offsetting fund.
e) For developments of 150 or more dwellings (gross), a whole life carbon assessment must be submitted which demonstrates how both operational and embodied emissions have been reduced compared to a 'do nothing' approach.

Householder, conversions and changes of use

f) Householder, conversion and change of use development is encouraged to take opportunities to improve the overall building and energy performance by incorporating the principles within a-d.

Commercial and non-residential development

g) Planning permission for new commercial and non-residential development over 1000sqm (gross) will be granted where:
    i. BREEAM 'Excellent' standard is achieved.
    ii. For developments of 5,000 sqm or more (gross), a whole life carbon assessment must be submitted which demonstrates how both operational and embodied emissions have been reduced.

Draft Policy 16: Preventing Overheating
Development of one or more dwellings (gross) or 200sqm of new commercial floorspace will be permitted where:

a) It has been designed to avoid overheating both now and in the future, demonstrated through a Sustainability Statement;
b) Proposals remove reliance on air conditioning systems and demonstrate this in accordance with the cooling hierarchy set in Table 8.

Draft Policy 17: Sustainable Construction Methods, Materials and Waste
All development should follow the construction methods, materials principles and waste hierarchy (as set out below) through the careful choice, use and sourcing of local and sustainable materials.

Development which increases the floorspace of the site will be permitted where it:

a) Minimises the creation of waste to support a circular economy;
b) Reuses or adapts existing buildings where applicable as part of the development whilst maintaining and enhancing local character and distinctiveness;

c) Optimises the use of sustainable construction materials, green walls and roofs, rainwater harvesting systems and greywater recycling;
d) Reuses and recycles appropriate materials that arise through demolition and refurbishment, including the reuse of non-contaminated excavated soil and hardcore within the site;
e) Uses locally sourced and environmentally friendly materials wherever possible; and
f) Submits a sustainability statement to demonstrate and outline how the requirements of this policy have been incorporated into the proposed development.

In addition to (a) to (f), development consisting of one or more dwellings, mixed use sites and communal living schemes will only be granted planning permission where:

g) The development reduces the level of construction waste, minimise environmental pollution (eg., microplastics) and enhance recycling of construction waste, demonstrated through a construction environment management plan (CEMP) and;
h) The incorporation of modular construction techniques is considered.

Draft Policy 18: Water Efficiency

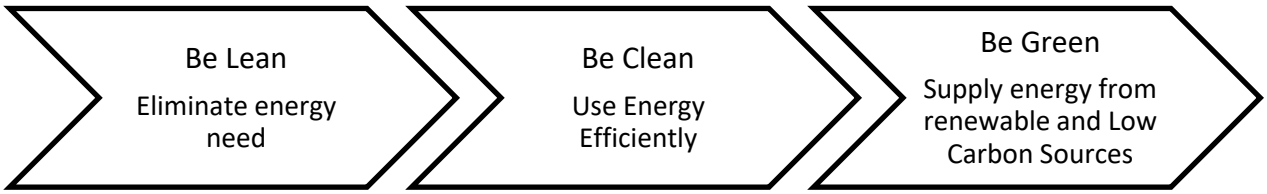
Development should be designed to meet a higher level of water efficiency. Planning permission will be granted where:

a) All proposals (including replacement dwellings, conversions and changes of use) which result in a net gain of overnight accommodation, include measures to achieve a water efficiency standard of no more than 110 litres per person per day;
b) All new build non-residential developments of 500sqm or more are designed and built to achieve at least one credit through the BREEAM criterion for water consumption (reference Wat 01).

5. Energy Assessment

5.1. Energy Hierarchy

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



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

Using these principles, Stonebond Properties (Guildford) Limited will deliver the following objectives:

- Comply with the relevant regulatory requirements.
- To reduce energy and CO_2 demand through fabric and energy efficiency measures.
- To propose to reduce energy consumption and carbon dioxide emissions further through the use of on-site renewable or low and zero carbon technologies (LZC).

5.2. Assessment Methodology

Elmhurst Energy software, which uses the Standard Assessment Procedure (SAP) 10.2 methodology to assess compliance with Part L1 2021, has been used to evaluate an initial CO_2 performance of representative residential dwellings. To assess energy performance of the entire residential development, an energy and carbon assessment model has been produced, which extrapolates the results of the SAP analysis using the floor area weighted average method detailed within Part L1 2021 to predict the energy consumption and CO_2 performance of the residential development.

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

5.3. Establishing The Baseline CO_2 Emissions

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

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

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

CO_2 Conversion Factors have been applied in accordance with the requirements of Building Regulations Part L 2021. These were detailed in the previous section of this report.

The residential baseline CO_2 performance is based on the Part L1 2021 Target Emission Rate (TER) performance of representative dwellings. The baseline CO_2 performance has been determined by carrying out SAP 10.2 modelling to establish the TERs of sample dwellings. The TER sets a minimum allowable standard for the energy performance of

a building and is defined by the annual CO_2 emissions of a notional building of the same type, size and shape to the proposed building. The specification of the notional building used to calculate the TER is defined within Building Regulations Part L 2021. The representative dwellings presented in the following table were used to carry out the SAP assessment.

Table 2: Representative Sample SAP Dwellings

Sample SAP Type Reference	No. of Units
1 BED FLAT (EXPOSED FLOOR)	2
1 BED FLAT (GROUND FLOOR)	1
1 BED FLAT (MID FLOOR)	2
1 BED FLAT (TOP FLOOR)	6
2 BED FLAT (GROUND FLOOR)	5
2 BED FLAT (MID FLOOR)	14
2 BED FLAT (TOP FLOOR)	2
HT-M2.9	9
HT-M3.11	4
HT-M3.12	10
HT-M3.13	6
HT-M4.11	29
TOTAL:	90

The calculated TER of the representative dwellings can be found on the SAP sheets within the appendices. The TER results of the SAP assessments from the representative dwellings have been extrapolated using a Carbon Emissions Reporting Spreadsheet. This then determines the total baseline for the residential element of the proposed development.

5.4. TOTAL BASELINE CO_2 EMISSIONS

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

Table 3: Total Baseline CO_2 emissions

Stage of Energy Hierarchy	Regulated CO_2 Emissions (tonnes/year)
Part L 2021 Baseline	93.90

6. DEMAND REDUCTION (BE LEAN)

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

A range passive design and active design measures to reduce CO_2 emissions and increase resilience to climate change are proposed. These proposals are detailed within the following sections.

It should be noted that the specifications detailed below have formed the basis of this energy strategy. However, the Developer does reserve the right to make appropriate changes to the final specification when the scheme reaches detailed design stage. In the case of any future alterations to this energy strategy, the Developer is committed to, as a minimum, achieving compliance with all of the relevant adopted planning policies and latest regulatory requirements. Details of the final energy strategy may be secured via the imposition of a planning condition if deemed to be necessary by the Local Planning Authority.

6.1. PASSIVE DESIGN

Passive design measures, including optimising orientation and site layout, natural ventilation and lighting, thermal mass and solar shading have been integrated in the design.

6.1.1. BUILDING ORIENTATION

Orientation varies across the proposed development. Orientation has been considered in the design of the façades to ensure energy use is balanced through daylight provision and thermal comfort.

6.1.2. SOLAR GAIN AND DAYLIGHT

The make-up of the proposed façades has balanced proportion of solid wall to glazing, thus providing optimum amount of daylight and winter solar heating, while limiting excessive solar gains in the summer. Some external shading will be provided in the form of balconies and deep window reveals, and this will be combined with high performance glass is proposed throughout the scheme for additional solar control.

6.1.3. BUILDING FABRIC

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

Table 4: Proposed Fabric Specification

Element	Part L1 2021 Minimum Fabric Requirements	Proposed Specification
Ground Floor	0.18 W/m²K	0.12 W/m²K
Exposed Floor	0.18 W/m²K	0.12 W/m²K
External Wall (to houses)	0.26 W/m²K	0.18 W/m²K
External Wall (to apartments)	0.26 W/m²K	0.19 W/m²K
Communal Wall	0.26 W/m²K	0.26 W/m²K
Party Wall	0.20 W/m²K	0.00 W/m²K

Cold Roof (insulated at ceiling)	0.16 W/m²K	0.08 W/m²K
Sloping Roof (insulated at slope)	0.16 W/m²K	0.16 W/m²K
Flat Roof	0.16 W/m²K	0.13 W/m²K
Windows	1.60 W/m²K	U-Value = 1.30 W/m²K G-Value = 0.41 BFRC Certificate
Bi-Fold/Patio Doors	1.60 W/m²K	U-Value = 1.40 W/m²K G-Value = 0.39 BFRC Certificate
Entrance Doors	1.60 W/m²K	1.20 W/m²K

6.1.4. Thermal Bridging

Where applicable, the thermal junctions will be independently assessed. This will minimise the effects of non-repeating thermal bridging and reduce heat loss further. By specifying and ensuring that appropriate detailing is designed into the build, CO_2 emissions can be greatly reduced. It is also proposed that the openings will have Hi-Therm lintels installed to maximise thermal efficiency and further reduce heat loss.

6.1.5. Air Tightness

High levels of air tightness are proposed for the buildings. The target for each residential dwelling will be set at 4.50m³/h/m². This is a significant improvement upon the Part L 2021 minimum requirement of 8.00m³/h/m². This means that air infiltration between the internal and external environment will be largely controlled and space heating demand further reduced.

6.2. Active Design

After reducing the energy demand of the development, the next stage is to use energy efficient building services systems, low energy lighting and controls throughout the scheme to reduce energy consumption and the associated CO_2 emissions.

6.2.1. Space Heating and Hot Water

It is proposed that the dwellings will have their heating and hot water supplied through highly efficient individual air source heat pumps. These will be supplemented with highly insulated hot water cylinders to ensure that the heat loss per day is kept to a minimum, thereby using less energy and keeping carbon emissions reduced.

The apartments will have their heating supplied via direct acting electric panel heaters and their hot water supplied through domestic hot water heat pumps.

Due to the nature of the energy hierarchy being adhered to within this energy strategy, the CO_2 emissions improvements that are achieved as a result of heat pump technology should only be accounted for at the 'Be Green' stage of the energy hierarchy. This is because heat pumps are considered a renewable/low carbon energy source. Therefore, for the purpose of reporting the 'Be Lean' figures, the notional building system type will be used as specified in the Part L 2021 baseline.

6.2.2. Ventilation

The residential dwellings will utilise continuously running decentralised extract fans (system 3) to all wet rooms and kitchens. This will ensure the airtightness of the dwellings can be kept low, without compromising on the necessity for good ventilation.

6.2.3. Cooling

It is currently assumed that the cooling requirements during the hot summer months will be met via openable windows/patio doors and mechanical ventilation with enhanced ventilation rates (where applicable). The development will be subject to an overheating assessment which will be carried out at the detailed design stage, whereby the overheating mitigation strategy will be finalised.

6.2.4. LIGHTING

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

- Using energy efficient lamps and luminaires. Low energy lamps and LED's are proposed throughout.
- Lighting controls (e.g. PIR sensors) will be provided in communal areas to reduce energy consumption.
- Having appropriately commissioned lighting systems.

6.2.5. SMART CONTROLS & ENERGY METERING

It is expected that the dwellings will be provided with an individual, programmable, zoned, control system, together with smart energy meters.

This will allow the display of energy use within individual units as required, assisting occupants to understand the way in which they consume energy and how much it costs. This will encourage them to turn off non-essential equipment or run equipment at a lower capacity during times of peak demand.

6.3. CO_2 Savings After 'Be Lean' Measures

After implementing all the passive and active energy efficiency measures for the 'Be Lean' stage of the energy hierarchy, the regulated carbon dioxide emissions for the proposed development are reduced by 3%. The total 'Be Lean' CO_2 emissions have been summarised below and compared against the baseline figure.

Table 5: Total 'Be Lean' CO_2 emissions

Stage of Energy Hierarchy	Regulated CO_2 Emissions (tonnes/year)
Total Part L 2021 Baseline	93.90
Total After 'Be Lean'	91.17
Total Saving	**2.73**
Total Improvement	**3%**

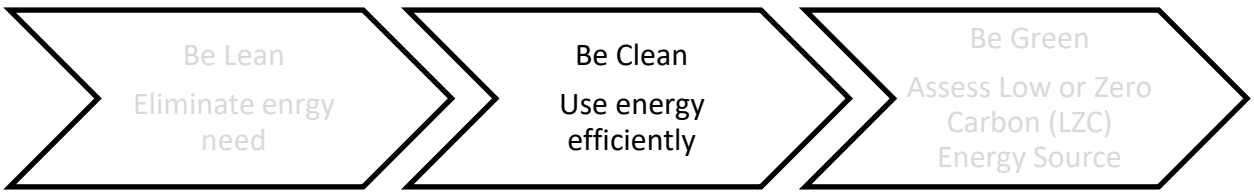
The Target Fabric Energy Efficiency rate is the minimum energy performance requirement, as stipulated by Building Regulations Part L1 2021, for all new residential dwellings. It is expressed as the amount of energy demand in units of kilowatt-hours per square metre of floor area per year. This performance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

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

Table 6: FEE Performance

Element	Target Fabric Energy Efficiency (TFEE) kWh/m²/year	Dwelling Fabric Energy Efficiency (DFEE) kWh/m²/year	Improvement (%)
Site Wide Average	36.11	34.46	5%

7. SUPPLY ENERGY EFFICIENTLY (BE CLEAN)



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

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

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

There are many benefits of decentralised heat generation and Combined Heat and Power (CHP) in terms of cost and CO_2 emissions savings. However, technology such as this is more significant for larger developments. The proposed development size of 90 dwellings is at the lower end of what the industry tends to view as viable for such systems. The development is for residential only and this will result in 'peaky' thermal demands with little anchor load to enable efficient operation of gas fired CHP. This option also risks the potential to increase costs to residents.

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

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

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

8. RENEWABLE ENERGY (BE GREEN)

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

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

The assessment has shown that individual air source heat pumps and domestic hot water heat pumps are considered to be the most suitable renewable/low carbon energy solutions for this development.

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

Although air source heat pumps and domestic hot water heat pumps are the chosen technologies at this stage, the final specification will be reviewed and decided upon at the detailed design stage This may include a change of heating strategy to include gas boilers in lieu of the heat pump technology. Should this situation arise, then the gas boilers would be supplemented by PV panels as the chosen alternative renewable technology. In the case of there being any future alternations to this energy strategy, the Developer is committed to, as a minimum, achieving compliance with all of the relevant adopted planning policies and the latest regulatory requirements. Details of the final energy strategy may be secured via the imposition of a planning condition if deemed necessary by the Local Planning Authority.

8.1. AIR SOURCE HEAT PUMPS (ASHP)

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

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

The main components of an ASHP are:

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

Some of the key advantages of ASHPs are listed below:

- ASHPs save carbon emissions. Unlike burning oil, gas, LPG or biomass, a heat pump produces no carbon emissions on-site (and no carbon emissions at all, if a renewable energy source is used to power them).
- They save space. There are no fuel storage requirements.
- They require less maintenance than combustion-based heating systems.

- Heat pumps can provide cooling in summer, as well as heating in winter.
- There is no combustion involved and no direct emission of harmful gases.

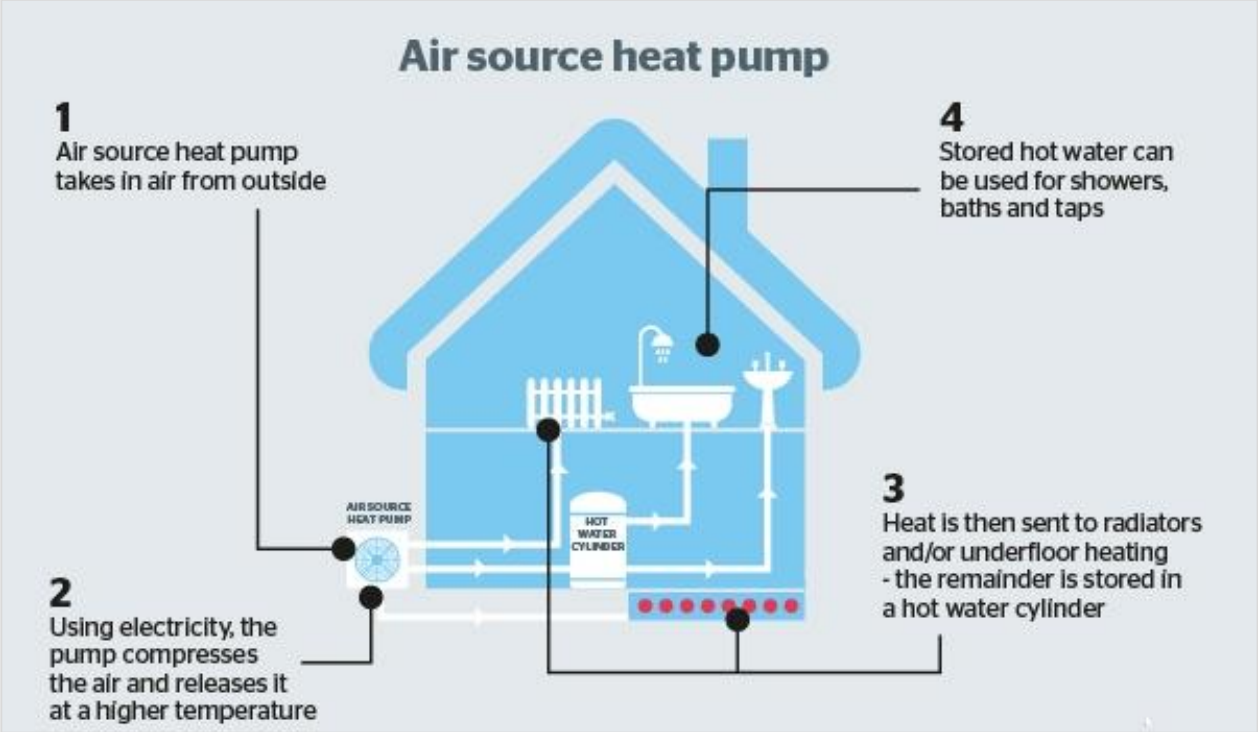
The use of individual Air Source Heat Pumps (ASHP) is proposed for this development to efficiently supply the houses with space heating and hot water. The ASHP are to be discreetly located within the boundary of each plot. Highly insulated hot water cylinders will be installed in conjunction with the ASHPs as part of the heating system of each dwelling.

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

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

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

Figure 2: Example diagram of ASHP System



8.2. VAILLANT AROSTOR DOMESTIC HOT WATER HEAT PUMP

Incredibly efficient and sustainable, aroSTOR uses thermal energy to heat hot water collected via an external air duct or it can be recycle hot air from within the room where it's installed. The only other energy needed is the electricity to run the appliance.

aroSTOR heat pumps use only R290 natural refrigerant, which is used widely in household appliances such as domestic fridge freezers. With R290, aroSTOR gives excellent performance for water heating as it can deliver 60° in the cylinder without any need for a back-up heater, whilst still providing strong efficiency levels.

Some of the features and benefits of the aroSTOR hot water heat pump are listed below:

- Flexible siting options – a small footprint and range of 360° air duct accessories offers flexible options for siting of the appliance.
- Highly energy efficient and reliable – gives high COP of >3.19 and best possible ErP label of A+.
- Controls – comes with integrated control.

- High quality material and components – stainless steel tank comes with a five year warranty (two years for other components).
- Extremely quiet operation – advanced insulation and use of rubber on the compressor for quiet operation.
- Hot water on demand – self-managing hot water comfort with electrical back up heater for hot water boost (and Legionella protection).

The use of the Vaillant aroSTOR (200 litre) is proposed for the apartments on this development to efficiently supply their hot water demand. The space heating for the apartments will be supplied through the use of electric panel heaters.

Although the electric panel heaters and aroSTOR heat pumps will require electricity to operate, the shift towards carbon neutrality will mean the electricity can eventually be generated solely through renewable sources. Therefore, there is less dependence on fossil fuels and this will future proof the homes against the ongoing decarbonisation of the electricity grid.

Figure 3: Diagram of the Vaillant aroSTOR

8.3. SUMMARY OF PROPOSED BUILDING SERVICES

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

Table 7: Summary of Proposed Building Services for the Houses

Building Service Element	Specification
Heating:	Air Source Heat Pumps Vaillant aroTHERM plus range (appropriate heat pump to be selected based on size of each property)
Heating Emitter:	Radiators
Secondary Heating:	None
Heating Hot Water Controls:	Time and Temperature Zone Control Delayed Start Stat No Weather Compensation
Cylinder: **Heat Loss:**	Hot water cylinder (capacity to be confirmed) 1.0 – 1.6 kWh/24 Hr
Mechanical Ventilation:	Mechanical Ventilation System 3 dMEV fans to wet rooms and kitchens
Waste Water Heat Recovery:	None
Showers:	Flow rate – 8 litres per minute

Table 8: Summary of Building Services for the apartments

Building Service Element	Specification
Heating:	Electric Panel Heaters
Hot Water:	Vaillant aroSTOR (200 litre) domestic hot water heat pump
Heating Hot Water Controls:	Time and Temperature Zone Control Delayed Start Stat No Weather Compensation
Mechanical Ventilation:	Mechanical Ventilation System 3 dMEV fans to wet rooms and kitchens
Showers:	Flow rate – 8 litres per minute

8.4. CO_2 Savings After 'Be Green' Measures

The following table presents the carbon savings achieved after the 'Be Green' stage of the energy hierarchy. This shows that a 65% improvement is achieved in comparison to the Building Regulations Part L baseline. This is in line with the adopted planning policy requirements at both national and local level.

Table 9: Total 'Be Green' CO_2 emissions

Stage of Energy Hierarchy	Regulated CO_2 Emissions (tonnes/year)
Total Part L 2021 Baseline	93.90
Total After 'Be Lean'	91.17
Total After 'Be Green'	33.11
Total Saving	**60.79**
Total Improvement	**65%**

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9. FUTURE HOMES & BUILDINGS STANDARD

The Future Homes Standard, renamed the Future Homes and Buildings Standard in December 2021, will complement the Building Regulations. When the Future Homes and Buildings Standard comes into effect, it will aim to reduce carbon emissions by 75-80% compared with homes delivered under the old regulations.

A timeframe for the Future Homes and Buildings Standard is yet to be agreed and finalised.

The Home Energy Model will be used in the Future Homes Standard assessment to demonstrate that new dwellings comply with the Future Homes Standard.

It will replace the SAP calculations currently used to assess the EPC (energy performance certificate) ratings.

The Home Energy Model is still under development but will be introduced with the finalised Future Homes and Buildings Standard.

It is possible that due to the anticipated construction programme of the proposed development, the dwellings may be built after the Future Homes and Buildings Standard comes into effect. The construction specifications will therefore need to be reviewed as the programme progresses to ensure that all dwellings remain compliant with the relevant regulatory requirements. It may be necessary for some specification upgrades, although it is unclear exactly what will be required until the standard is published.

This energy strategy has been developed using the assessment tools that are currently available and demonstrates full compliance with the current Building Regulations requirements, and the requirements of Havant Borough Council. The energy strategy detailed herein should be reviewed when the scheme reaches detailed design to ensure that the proposals make best use of the technology available at the time, and are fully compliant with any updated regulatory requirements.

10. Energy Strategy Summary and Conclusions

The energy strategy has followed the energy hierarchy of 'Be Lean', 'Be Clean' and 'Be Green'. The energy strategy proposed for the development has been summarised as below.

Table 10: Proposed Energy Strategy

Element	Measure
Passive	Optimised design to enable controlled solar gain and improved direct and indirect natural lighting.
Fabric	Building fabric U values have been enhanced over and above those detailed with Part L 2021
Heating	Houses – Individual Air Source Heat Pumps Apartments –Electric Panel Heaters
Hot Water	Houses – Hot Water Cylinders (water heated via ASHP) Apartments – Vaillant aroSTOR Domestic Hot Water Heat Pump
Ventilation	Low design air permeability (DAP) Mechanical extract ventilation (system 3)
Lighting	Energy efficient LED Lighting where applicable
Low and Zero Carbon Technology	Heat pump technology to be deployed (as detailed above)

10.1. Total Regulated CO_2 Savings

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

Table 11: Energy Strategy Carbon Emissions Summary

Stage of Energy Hierarchy	Regulated CO_2 Emissions (tonnes/year)
Total Part L 2021 Baseline	93.90
Total After 'Be Lean'	91.17
Total After 'Be Green'	33.11
Total Saving	**60.79**
Total Improvement	**65%**

The proposed energy strategy achieves and meets the following requirements:

- Complies with all of the main compliance criteria required by Part L 2021 of the Building Regulations.
- Includes improved optimal building fabric improvements, energy efficient design of building services.
- The fabric energy efficiency (DFEE) achieves a 5% reduction over the minimum standards defined by Building Regulations Part L1 2021 (TFEE).
- Estimated to annually reduce 60.79 tonnes of regulated CO_2 emissions compared to the Building Regulations Part L 2021 baseline
- Achieves an overall reduction in regulated CO_2 emissions of 65% compared with the Building Regulations Part L 2021 baseline.
- The energy strategy is in line with the adopted planning policy requirements at both national and local level.

11. SUSTAINABILITY STRATEGY

11.1. MATERIALS & WASTE

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

The BRE Green Guide to Specification is a simple guide for design professionals. The guide provides environmental impact, cost and replacement interval information for a wide range of commonly used building specifications over a notional 60-year building life. The construction specification will prioritise materials within ratings A+, A or B. Preference will be given to the use of local materials & suppliers where viable to reduce the transport distances and to support the local economy.

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

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

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

Construction Waste will be managed during both the construction and operational phases according to the waste hierarchy detailed below.

Figure 4: Waste Hierarchy

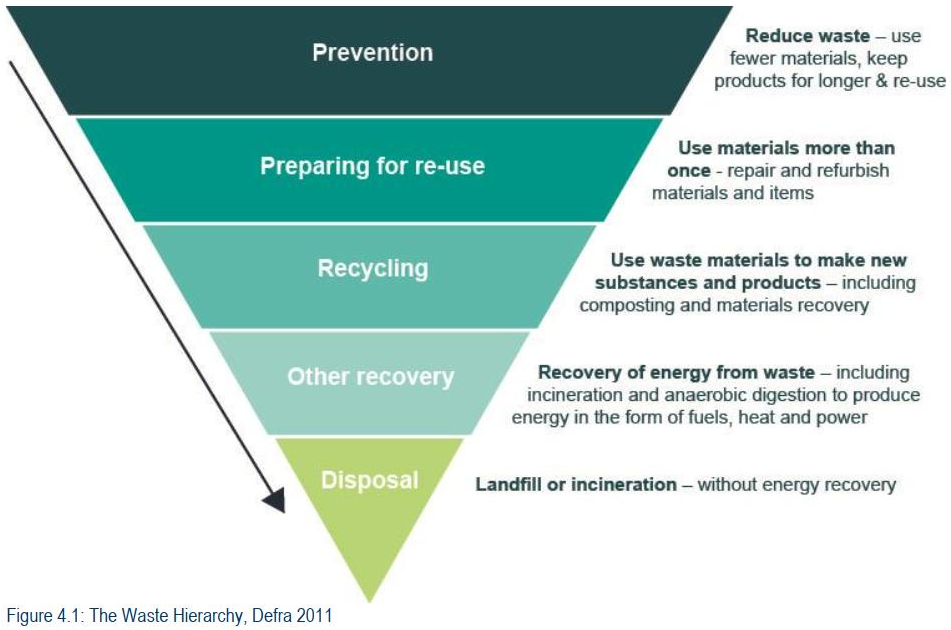


Figure 4.1: The Waste Hierarchy, Defra 2011

Step 1: Eliminate Waste

Construction practice and design should reduce waste wherever possible through measures including:

- Efficient procurement avoiding over-supply and excessive packaging; and
- Eliminating waste at the design stage.

Step 2: Reuse waste materials
Reuse waste materials, ideally in its current location, avoiding the energy costs associate with transport and recycling.

Step 3: Recycle/compost waste materials
Recover materials through recycling and substitute for primary materials. Compost organic material to produce rich soils that replace fertilisers, ideally in a closed system to avoid the emissions released by organic material in landfill.

Step 4: Recover energy
If it cannot be reused or recycled, use waste instead of fossil fuels in energy generation to recover embodied energy.

Step 5: Disposal to landfill
Usually the last resort. Disposal to landfill wastes materials and embodied energy.

Construction operations generate waste materials as a result of general handling losses and surpluses. These wastes can be reduced through appropriate selection of the construction method, good site management practices and spotting opportunities to avoid creating unnecessary waste.

Targets will be set to promote resource efficiency in accordance with guidance from WRAP, Envirowise, BRE and DEFRA.

During the construction phase, the principal contractor, will be required to implement the Site Waste Management Plan (SWMP) which will detail responsibilities for resource management, what types of waste will be generated, how the waste will be managed (e.g. reduced, reused or recycled), which contractors will be used and how the quantity of waste generated by the project will be measured. It will also cover handling and storage of materials to avoid damage, efficient purchasing arrangements to minimise over ordering and segregation of construction waste to maximise potential for reuse/recycling.

The development will be constructed using industry leading procedures for the on-site segregation of waste products and will look to segregate waste under following categories:

- Mixed Waste
- Light mixed and compactible
- Inert
- Timber
- Plasterboard
- Mixed Metals
- Hazardous
- Other

A designated area will be identified for waste management for each phase and clear signage will be provided to ensure correct segregation of waste.

Waste will be minimised using the following techniques:

- Managing materials efficiently
- Consideration taken for build dimensions to avoid cut bricks, offcuts plasterboard etc.
- Mass balancing exercise will be undertaken to retain as much material on site as possible therefore minimising waste to landfill
- Site layout and programme reviewed to maximise the reuse of site won materials
- Any demolition concrete waste will be crushed and re-used on site for hardcore

- Suppliers will be responsible for their own removal of packaging

Management reports will be produced at an agreed period where actual recycling quantities achieved will be reviewed against targets set.

11.1.1. Circular Economy

A circular economy is a model of production and consumption, which is based on the reuse and regeneration of materials or products, especially as a means of continuing production in a sustainable and environmentally friendly way.

New buildings on the site will follow best practice principles in their design and construction with the overarching aims of reducing material usage, minimising waste and embedding longevity, flexibility and adaptability. Advances in innovation and best practice over the phased delivery with effective feedback loop mechanisms are expected to lead to continuous improvement as the design and construction develops. The construction of this new development will allow the energy and operational efficiency of the building to be optimised without the fabric constraints of an unsuitable existing building.

The Site Waste Management Plan will identify targets for:

- Managing construction site waste and monitoring the amount of waste generated
- Minimising waste diverted to landfill
- Maximising the use of recycled/reused/reclaimed materials for construction (where practicable)
- Using efficient design practices to minimise the quantity of materials required for construction

A project specific Waste Management Strategy will be developed for the operation of the development (post-construction) making all the necessary allowances to ensure that waste arisings can be accommodated under a full occupancy scenario. The strategy will consider the flow of waste from waste generator (i.e. residents/tenants) through to storage and collection. The Waste Management Strategy will consider the potential impacts that may arise from waste generated during the operational phase, with the overall aim of developing a strategy for legislative compliance and good practice in the separation, storage, and collection of waste arising.

11.1.2. Embodied Carbon

Embodied Carbon can be defined as the carbon emissions associated with the extraction and processing of materials and the energy and water consumption used by the factory in producing products and constructing the building. It also includes the 'in-use' stage (maintenance, replacement, and emissions associated with refrigerant leakage) and 'end of life' stage (demolition, disassembly, and disposal of any parts of product or building) and any transportation relating to the above.

Carbon dioxide and other greenhouses gases relating to Embodied Carbon are associated with the following stages:

- Product: extraction and processing of materials, energy and water consumption used by the factory and transport of materials and products.
- Construction: building the development.
- In-use: maintenance, repair, refurbishment, replacement and emissions associated with refrigerant leakage.
- End of life: demolition, disassembly waste processing and disposal of any parts of product or building and any transportation relating to the above.

The following primary actions in reducing embodied carbon have been considered for the development proposal:

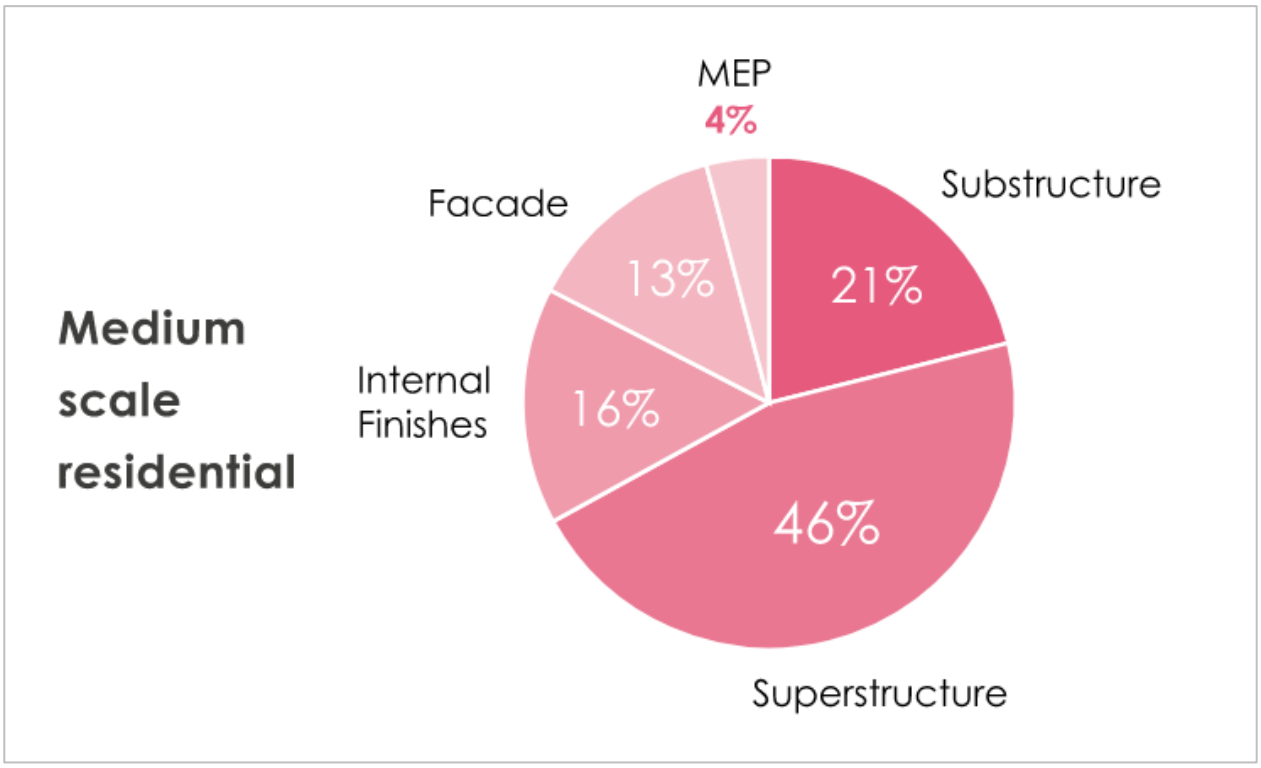
1. Build less: Refurb and re-use.
2. Build light: Consider the building structure.
3. Build wise: Longevity and local context.

4. Build low carbon: Review material specifications.
5. Build for the future: Assess end of life and adaptability.
6. Build collaboratively: Involve the whole team.

The LETI Climate Emergency Design Guide (January 2020) goes on to detail a number of reduction measures of embodied carbon by element. This development proposal seeks to include these reduction measures where practically possible.

The figure below details the relative proportions of embodied carbon by building element (for medium scale residential).

Figure 5: Relative Proportions of Embodied Carbon by Building Element



11.2. WATER EFFICIENCY

11.2.1. HOUSEHOLD WATER USE

Household water reduction measures will include the following where applicable:

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

The following specification (or similar) will be adopted on the development to ensure that the water consumption of the residential dwellings is limited to 110 litres per person per day. This minimises water consumption in line with the requirements of Havant Borough Council's Draft Policy 18.

Table 12: Specification of flow rates and volumes for water using appliances

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

Table 13: Water Calculations

Water Calculations					
Installation Type	Unit	Capacity/	Use Factor	Fixed use	**Total Use**
		Flow Rate		(l/p/day)	**(l/p/day)**
WC Single Flush	Volume (l)	0.00	4.42	0.00	0.00
WC Dual Flush	Full Flush (l)	6.00	1.46	0.00	8.76
	Pt Flush (l)	3.00	2.96	0.00	8.88
WC's (Multiple)	Volume (l)	0.00	4.42	0.00	0.00
Taps Exc. Kitchen	Flow Rate (l/min)	3.00	1.58	1.58	6.32
Bath (shower present)	(l/min)	190.00	0.11	0.00	20.90
Shower (bath present)	(l/min)	8.00	4.37	0.00	34.96

Bath Only	(l)	0.00	0.50	0.00	0.00
Shower Only	(l/min)	0.00	5.60	0.00	0.00
Kitchen Taps	(l/min)	6.00	0.44	10.36	13.00
Washing Machines	(l/kg dry)	8.17	2.10	0.00	17.16
Dishwashers	(l/place)	1.25	3.60	0.00	4.50
Waste Disposal	(l/min)	0.00	3.08	0.00	0.00
Water Softener	(l/min)	0.00	1.00	0.00	0.00
Total Calculated Water Use (l/p/day)					**114.50**
Grey/Rain Water Reused (l)					0.00
Normalisation Factor	(Factor)				0.91
Total Internal Consumption (l/p/day)					**104.20**
External Water Use Allowance (l)					5.00
Total Consumption Part G (l/p/day)					**109.20**

11.2.2. CONSTRUCTION PHASE

Water efficiency is considered during the construction process and the following practices on site will reduce usage and waste:

- High pressure low volume power hoses
- Waterless wheel washing
- Installing water meters and monitoring, reporting and setting targets for water consumption

11.3. Enabling Sustainable Lifestyles, Health and Well-being

11.3.1. Electric Vehicle (EV) Charging Strategy

Active electric vehicle (EV) charging facilities will be provided for each dwelling with a private driveway. In accordance with Building Regulations (Requirement S1 and Regulation 44D), cable routes (passive charging provision) will be installed for all allocated parking spaces that do not have active charge points.

11.3.2. Access to Nature

As part of the proposed Landscape Strategy, green infrastructure will be woven throughout the scheme. Open amenity space will be a key feature of the development. Private back gardens will be provided to the houses.

Through the provision of planting and soft landscaping in both private and public spaces across the scheme, future residents will have ample access to nature on their doorsteps. This will contribute to the health and well-being of the future residents by aiding in reducing stress and improving mental health.

11.3.3. Air Quality

An Air Quality Constraints and Opportunities Appraisal has been carried out by Cass Allen Associates Ltd., dated July 2025. This appraisal considers the potential air quality effects associated with the proposed development. The appraisal was carried out with regard to relevant local and national planning policy and guidance.

The site is located to the north of Havant, which does not have any declared Air Quality Management Areas (AQMA), indicating air quality in the borough is generally acceptable.

Emissions of construction phase dust and particulate matter (PM: PM_{10}) were assessed in accordance with Institute of Air Quality Management (IAQM) guidance. A Medium Risk of dust soiling and Low Risk of PM_{10} health effects have been identified, in the absence of mitigation. Suitable best practice mitigation measures have been recommended and no significant residual effects are expected.

No significant impacts on local air quality are anticipated as a result of changes in vehicle trips associated with the development, with no requirement for additional mitigation.

Accordingly, the overall effect of the development is considered 'not significant' with regard to air quality.

In addition, by providing EV charging infrastructure, future residents will be encouraged to reduce their reliance on conventional combustion-engine vehicles. The associated pollutants, such as sulphurous oxides (SOx) and nitrous oxides (NOx), will be reduced, thus contributing to improved local air quality.

The extensive planting, planned as part of the proposed Landscape Strategy, will also contribute to the improvement of local air quality. This will be supported through the delivery of additional green infrastructure, as well as extensive tree and vegetation planting.

11.3.4. Noise Pollution

A Noise Assessment has been carried out by Cass Allen Associates Ltd., dated July 2025. This assessment reviews the potential noise sources that may pose a constraint to development.

An noise survey was carried out at the site from 16th – 23rd April 2025 to assess the existing noise levels in the area. Noise levels at the site were found to be dictated by road traffic emissions from Bartons Road and the B2149 and mechanical plant noise from the adjacent SSE site.

A 3D noise model of the development was constructed based on the results of the site noise survey. The noise model was used to predict noise levels across the development.

Noise affecting the development has been assessed in accordance with ProPG guidance. The design of the development is considered to be acceptable subject to the adoption of acoustically upgraded glazing and ventilation and acoustic screening around gardens. This can be investigated further at the detailed design stage and may be secured by the imposition of a noise-related planning condition by the Local Planning Authority.

Compliance with noise criteria in Building Regulations Part O has also been assessed. Some bedrooms will need to be designed so that windows can remain closed at night without the rooms overheating. This can be assessed further in due course.

Noise emissions from the SSE site have been assessed. It is envisaged that noise levels from the SSE site can be largely mitigated, subject to acoustically upgraded glazing and ventilation, and screening around gardens. However, it is recommended that noise emissions from this site are assessed at the detailed design stage, once it has been possible to establish the operating conditions of all mechanical plant items associated with this site. However, it is still expected that mechanical plant noise from the SSE site will be audible.

Noise emissions from the nearby public houses have also been assessed. It has been calculated that noise levels from these sources can be suitably mitigated, subject to the adoption of the glazing and ventilation strategy set out in this report.

Appropriate limits for noise from mechanical plant have been calculated based on measured noise levels at the site and guidance given in BS4142. It is envisaged that it will be straightforward to achieve the plant noise limits. This will be investigated further at the detailed design stage and may be secured by the imposition of a noise related planning condition if deemed necessary by the Local Planning Authority.

The Noise Assessment concludes with the view that the site is suitable for the proposed development in terms of noise levels and that planning permission may be granted subject to the imposition of suitable planning conditions, if necessary.

11.3.5. Communal Space

The central open space is designed to contain pedestrian routes, a doorstep play area and open spaces. The design is arranged to provide a series of sub spaces for use by the local neighbourhood in a large group, and down to families and individuals.

The surface finishes and furniture palette area are all high quality and will provide a durable and robust public realm. The seating is positioned to allow parents and guardians watch children playing in the space and also allow people to mix easily and comfortably.

The delivery of well designed, accessible and inclusive public space will offer residents spaces to socialise and engage with each other, encouraging interaction and opportunities to benefit from healthy lifestyle choices.

11.3.6. Daylight & Sunlight

Access to daylight and sunlight is associated with numerous health benefits, including improved sleep and mental health.

As is demonstrated within the proposed masterplan, the dwellings will be spaced accordingly to ensure that overshading is minimised, and the levels of natural daylight availability within the dwellings is maximised.

The proposed fenestration will be balanced to provide optimal levels of daylight, whilst also mitigating the risk of overheating.

Areas of open space, both public and private, have been configured to ensure the levels of sunlight received are sufficient for creating desirable external environments.

11.3.7. Encouraging Active Living & Sustainable Transport

A Residential Travel Plan (TP), dated July 2025, has been prepared by C&A Consulting Engineers in support of this planning application. This details how the future residents' use of safe, healthy and sustainable travel options will be encouraged.

The application site is located on the corner of Petersfield Road and Bartons Road, approximately 1.5 miles north of Havant town centre.

Due to the site's proximity to Havant Town Centre, there are a wide range of amenities within comfortable walking or cycling distance of the site, including health services, schools and leisure activities.

The existing infrastructure within the vicinity of the site facilitates good connectivity to the site for both walking and cycling. Various footways and cycleways offer future residents with opportunities to walk or cycle to the surrounding areas. The Havant Local Cycling and Walking Infrastructure Plan (LCWIP) and associated interactive cycle map identify a number of on-carriageway and traffic-free cycling facilities in the vicinity, which will support sustainable access to the development.

The development proposes some physical infrastructure as part of the development to promote sustainable modes of travel. Within the development site itself these will consist of secure cycle parking for each residential unit, including a secure, lit cycle store for the flats and within sheds located in the rear gardens of houses.

The proposals also include a number of measures to improve the existing infrastructure and create new connections for pedestrians and cyclists. It is considered that these measures will further encourage safe and convenient walk and cycle links for residents to/from surrounding areas, such as Leigh Park.

In terms of public transport, there are several bus stops in close proximity to the site. The 'Douglas Gardens', is situated approximately 150 metres from the site on Martins Road. The stop is served by bus service 20, operated by Stagecoach, which operates between Havant and Portsmouth with a half-hourly frequency from Monday to Saturday.

The nearest railway station is Havant Railway Station, located approximately 1.5 km (22-minute walk) south of the proposed development. The station provides 92 sheltered cycle storage spaces and 492 car parking spaces.

Rail services from Havant provide direct access to popular destinations including Portsmouth Harbour, Southampton Central, Brighton, London Waterloo, and London Victoria. The table below outlines the available services.

Travel information leaflets will be printed and distributed to all new residents. This promotes key messages on sustainable transport and promotes local schemes and routes including:

- Details of walking and cycling routes, destinations and local groups which can support residents;
- Provision of walking and cycling maps of the local area as well as details of leisure routes within the wider area;
- The benefits of reducing car use such as improved health through increased walking and cycling, as well as potential money savings from not running a car;
- Links to further information such as NHS, Havant Borough Council and Hampshire County Council's websites which promote the use of sustainable transport modes;
- Incentives available to residents (as described below); and
- Contact details of the Travel Plan Coordinator.

11.3.8. Security

Natural surveillance in the form of doors and windows overlooking streets, pedestrian routes and public open spaces will create activity throughout the day and evening and will be an essential element in creating a safe environment for all users, whilst discouraging criminal activity by increasing the risk of detection.

11.3.9. Recycling and Waste Management

Sustainable behaviour will be encouraged and recycling and household waste facilities will be provided. Internal and external storage spaces will be designed to satisfy the Havant Borough Council's waste bin specification for the removal of general household waste, recyclable waste and garden waste respectively.

11.3.10. Provision of Broadband for Home Working

The availability of broadband connections is essential in ensuring that people remain connected and are able to access a range of services effectively.

The dwellings will allow for broadband connection for the future occupants. This will facilitate the future occupants with the option for home working. The mechanical and electrical layouts will be such that services (power points, telephone cabling, etc) can be located in a suitable location within the property.

11.4. ECOLOGY

11.4.1. PRELIMINARY ECOLOGICAL APPRAISAL

John Wenman Ecological Consultancy has prepared a Preliminary Ecological Appraisal (PEA) of the Site, dated July 2025, to identify any ecological constraints to development, inform scheme design, highlight opportunities for ecological enhancement and present the findings of additional investigations/surveys. This PEA updates a pre-existing Ecological Appraisal produced by Pro Vision Ecology in October 2020.

As part of this PEA, an ecological desk study and field survey of the Site (site walkover, dated 5 August 2024 & 23 July 2025) were undertaken, including a UK Habitat Classification survey.

The desk study (including a HBIC 1km data search) revealed that the application site is not statutorily or non-statutorily designated for its wildlife interest and has no protected/notable species records.

The application site is 1.7 hectares of disused urban land. The site is characterised by bare gravel with parcels of ruderal vegetation and grassland plant communities that form a mosaic within the centre of the site (i.e. sparsely vegetated urban land) meeting the criteria for open mosaic habitat on previously developed land – a priority habitat of high distinctiveness with value at the local level. There were areas of other neutral grassland towards the southern end of the site, bramble scrub adjacent to the tarmac track on the eastern boundary and around the western and northern boundary of the site with mixed scrub and scattered trees on the south-western boundary – which resemble medium distinctiveness habitats of site value for local wildlife (e.g. nesting birds and foraging bats).

The PEA makes the following recommendations for the Site:

- Developer contributions towards implementing the Bird Aware Solent Strategy;
- Habitat protection measures;
- Sensitive lighting for bats;
- Precautionary avoidance measures for amphibians and reptiles;
- Precautionay timings for nesting birds; and
- Ecological Enhancement Measures, to include the following:
  - The aim of the landscaping on site should be to increase the structural diversity and species diversity of the site. The proposed new gardens and boundaries should seek to enhance the ecological value of the site by making use of native plant species of local provenance to enhance the site for invertebrates.
  - The provision of bird nest boxes at the eaves of the new dwellings on site for priority species such as house sparrow (Passer domesticus) and straling (Surnus vulgaris).
  - The provision of bat roosting features, such as integral or external bat boxes in the new walls of the buildings, to be incorporated into the new residential dwellings to provide crevice roosting opportunities.

11.4.2. BIODIVERSITY NET GAIN

John Wenman Ecological Consultancy has prepared a Biodiversity Net Gain Assessment (BNGA), dated July 2025, of the proposed development.

The Biodiversity Metric calculation tool demonstrates that the feasibility of delivering a minimum of 10% net gain for biodiversity is unlikely to be possible within scope of proposals. The final results taken from the tool shows a total onsite net change of -77.75% in habitat units and a deficit of 8.25 units for achieving a 10% net gain. To meet the mandatory requirement, offsite gains will need to be made by either purchasing units from a land manager or utilising land outside of the application site but under the applicant's ownership. The 'Former SSE Depot, Havant – The Statutory Biodiversity Metric Calculation Tool (R2724_BNG_a)' document should be referred to separately for the full calculation.

11.5. Summer Overheating and Cooling

With a continual drive for energy efficiency through both the Building Regulations and Local Planning Authority requirements, the risk of overheating to dwellings in the summer months is becoming more prevalent. Overheating can be a mild discomfort or a hazard to health if managed incorrectly, so it is vitally important that overheating risk be mitigated to ensure the dwelling will be both energy efficient and comfortable to live in.

Summer overheating is caused when there is excess build-up of heat within a dwelling. This can occur where there is excessive solar gain and limited means to absorb excess heat into the building fabric or purge this heat through ventilation. Summer overheating can be managed through a variety of measures and the chosen solution will vary from development to development. These measures can include:

Limiting Solar Gains

1. Orientation and Shading:
    - Buildings should be designed to minimise solar gains during the summer months. This can be achieved by orienting the building to reduce exposure to direct sunlight and using shading devices such as overhangs, awnings, or brise-soleil.
    - Consideration should be given to the use of trees and vegetation for natural shading.
2. Glazing Strategy:
    - The amount, type, and position of glazing should be carefully considered. High-performance glazing with low solar transmittance values (g-values) can help limit solar heat gain
    - Use of external shading devices or blinds to reduce solar gain through windows.
3. Internal Layout:
    - Arrange internal spaces to position heat-sensitive rooms (such as bedrooms) away from areas of high solar gain.
    - Use buffer zones, such as corridors or storage areas, on the sunniest side of the building.

Removing Excess Heat

1. Natural Ventilation:
    - Design for effective natural ventilation through the use of acoustically attenuated vents where external noise levels allow. Use cross ventilation by having openings on opposite sides of the building.
2. Mechanical Ventilation and Cooling:
    - Where natural ventilation is insufficient, mechanical ventilation systems may be used, potentially incorporating heat recovery to improve energy efficiency.
    - In extreme cases, mechanical cooling (such as air conditioning) may be necessary, but should be a last resort due to it's energy consumption.
3. Thermal Mass:
    - Use thermal mass within the building to absorb heat during the day and release it during cooler periods (e.g., at night).
    - Materials like concrete, brick, or stone can provide effective thermal mass.

The development will be subject to Part O of the Building Regulations, which came into effect on 15th June 2022. Where possible, compliance with Part O can be demonstrated using the simplified method. Where this is not possible, dynamic thermal modelling will be required. CIBSE TM59 is an approved methodology of dynamic thermal modelling. It includes a set of overheating criteria specifically aimed at residential spaces. It is mandatory to perform the TM59 calculations using a Dynamic Simulation Modelling (DSM) software. The TM59 recommended DSY1 weather file was used for the main overheating analysis.

TM59 requires compliance by passing both of the following criteria for homes predominantly naturally ventilated:

1. All living rooms, kitchens areas must have ΔT greater than or equal to one degree (K) during the period May to September (identical to TM52 criterion 01: hours of exceedance).

2. For bedrooms only, to guarantee comfort during the sleeping hours the operative temperature in the bedroom from 10pm to 7am shall not exceed 26°C for more than 1% of annual hours which will be 33 hours.

The TM59 criteria for predominantly mechanically ventilated dwellings is as follows:

1. For homes with restricted window openings, the fixed temperature test must be followed – i.e., all occupied rooms should not exceed an operative temperature of 26°C for more than 3% of annual occupied hours.

It should be noted that ground floor bedrooms are to be assessed with their windows fully closed at nighttime. This is due to security reasons imposed by Part O of the Building Regulations. In addition, the Noise Assessment, carried out by Cass Allen Associates Ltd. (dated July 2025), has identified various restrictions on window openings due to the impact of noise. These window restrictions will need to be taken into account when developing the overheating mitigation strategy. For bedrooms where windows will need to be fully closed at night time, appropriate mitigation will be required. This is likely to be mechanical ventilation with enhanced flow rates.

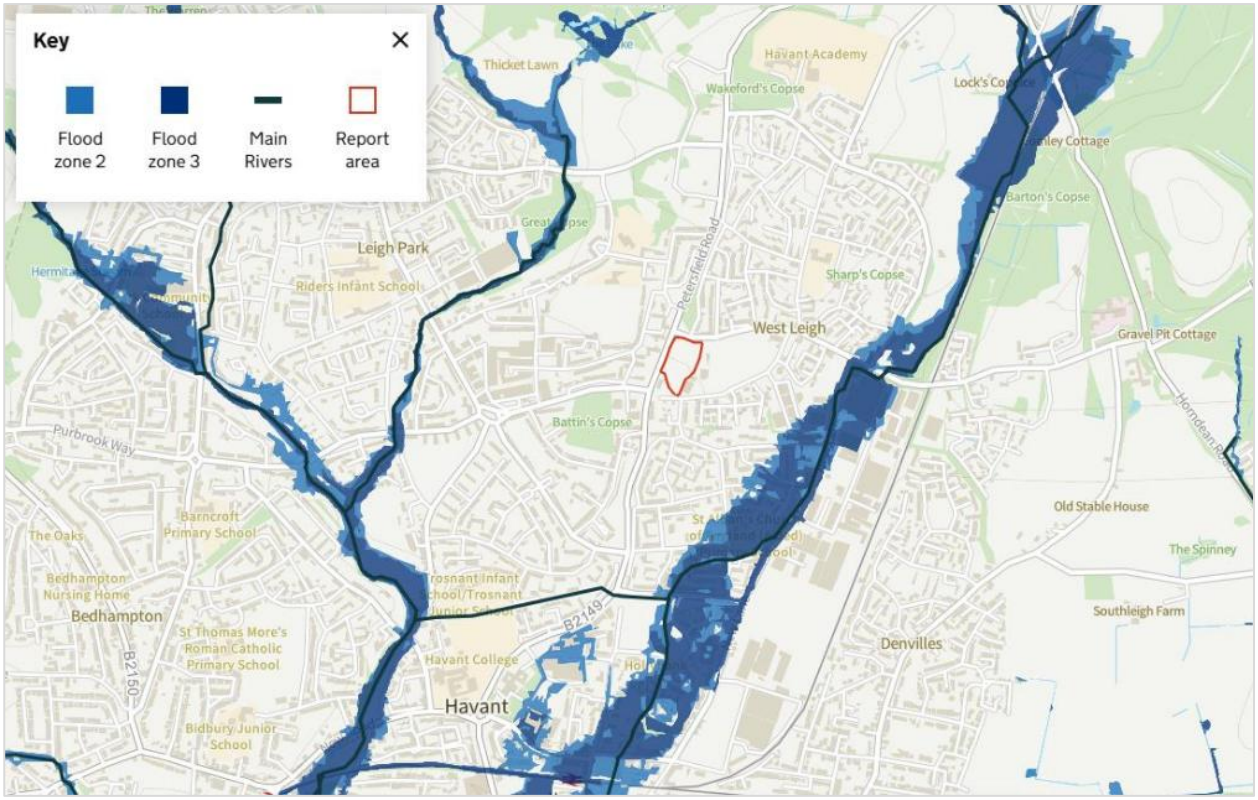
11.6. Flood Risk & Drainage Strategy

In support of this application, a Flood Risk Assessment and Drainage Strategy (Ref: 24-097-002), has been prepared by C&A Consulting Engineers, dated July 2025.

11.6.1. Flood Risk

The Flood Risk Assessment confirms that the site is located within Flood Zone 1 (see Figure below), which is defined as land having a very low risk (less than 0.1% annual probability of river flooding.

Figure 6: Flood Map for Planning



The Flood Risk Assessment summarises the risk of flooding from the following sources:

- Fluvial/Tidal
- Surface Water/Overland Flow
- Sewers
- Groundwater
- Artificial Sources

The Flood Risk Assessment has confirmed that the site has, at least, a low risk of flooding from all of the above sources. In assessing the flood risk the impacts of climate change have been considered for the lifetime of the proposed development and are also considered acceptable. Surface Water run off will be dealt with via the use of SuDS to reduce flood risk both on and off the site.

11.6.2. Surface and Foul Water Drainage Strategy

The Surface Water Drainage Strategy set out in this assessment proposes management of surface water run-off from the development through the use of sustainable drainage techniques which will provide an improved surface water drainage regime and flood risk profile.

Consequently, this will reduce surface water run-off flows from the site, for storm return periods up to 1 in 100 years plus an allowance for climate change. The proposed development will not increase the risk of flooding

elsewhere. The implementation of the SuDS scheme as proposed will reduce any existing risk of downstream flooding.

The SuDS features which will be implemented on this scheme are listed below:

- Underground Attenuation
- Permeable Pavements
- Discharge Control

Foul run off from the Development will be collected via a piped network and drain to an existing public foul sewer within the south east corner of the Site, subject to network upgrades which may be required to provide capacity. Thes upgrades if required will be funded by Southern Water using the New Infrastructure Charges mechanisms.

The Flood Risk Assessment and Drainage Strategy concludes that due to the positive outcomes of the assessments, there is no reason why the site should not continue through the planning process and be approved for residential development and commercial development in respect of flood risk surface water and foul drainage.

11.7. LANDSCAPING

Sustainable landscapes are responsive to the environment, re-generative, and can actively contribute to the development of healthy communities. Sustainable landscapes sequester carbon, clean the air and water, increase energy efficiency, restore habitats, and create value through significant economic, social, and environmental benefits.

A well designed public realm can contribute significantly to the quality of the built environment and play a key role in the creation of a sustainable and inclusive environment.

A key objective of the landscaping proposals is to establish a clear identity for this development, promoting an environment where quality of life and the quality of the environment are integral to enrich the experience of the residents and their visitors. This is to be achieved by strengthening the local connections to neighbouring areas and open spaces, through the creation of legible pedestrian routes and new public spaces.

The proposals illustrated in the masterplan are based on a number of integrated principles, set out below to produce and attractive, distinctive and inclusive place which enhances the area's character and identity.

- Defining Spaces, Connections and Permeability
- Defensible Space
- Comfort and Safety
- Planting
  - Define key routes and desire lines through the use of structure planting.
  - The use of specimen species to create a focal point within a space.
  - Reinforce the spatial definition of a space.
  - Establish and reinforce key views.
  - Improve the micro-climate through air quality and reduction in noise levels in problem areas, for example tree planning along roads.
  - Provide shelter from wind and rain, or reduce glare and reflections.
  - Demarcate different uses, for example between traffic and pedestrian routes.
  - Low level planting to allow natural surveillance through the site.

The public realm should be designed to bring these principles together in a cohesive manner that will contribute to the overall character of the area, integrating it within the surrounding context to create lively, diverse and safe series of places where people want to live and visit.

12. APPENDICIES

The following pages detail:

- Appendix A: Alternative Renewable Energy Options
- Appendix B: Vaillant aroTHERM Plus Technical Datasheet
- Appendix C: Vaillant aroSTOR Technical Datasheet
- Appendix D: Sample SAP Summary Information Sheets (Be Lean)
- Appendix E: Sample SAP Summary Information Sheets (Be Green)

12.1. APPENDIX A: ALTERNATIVE RENEWABLE ENERGY OPTIONS

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

Wind Turbines

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

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

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

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

Biomass Boilers

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

Biomass is considered a technically-viable option for this development scheme as there are no apparent physical constraints on site in terms of installing biomass boilers or storing a sufficient supply. There are, however, concerns regarding a sustainable supply of biomass to the site. The capital installation cost would also be high which leads us to the conclusion that biomass would not be a commercially-viable option for this development scheme.

Solar Thermal

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

High installation costs and dependency on sunlight has meant that this option has been discounted for this development.

Ground Source Heat Pumps (GSHP)

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

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

With regards to capital cost, GSHPs are more expensive to install than ASHP and also rely on the use of energy to pump fluid around the pipework.

GSHPs have been discounted for this scheme are they are considered to be more complex, technically risky and costly, than the alternative ASHP option.

Photovoltaic Panels (PV)

Photovoltaic panels (PV) capture the sun's energy and convert it into electricity. This could be a solution to reduce CO_2 emissions to satisfy building regulations, however, the efficient building fabric and use of air source heat pumps ensures compliance is met without the need for PV. Subject to the anticipated construction programme, some dwellings may need to include PV panels in order to further reduce carbon emissions in accordance with the incoming Future Homes and Buildings Standard. Furthermore, the use of PV panels may be explored further at the detailed design stage as a suitable alternative to air source heat pumps.

12.2. APPENDIX B: VAILLANT AROTHERM PLUS TECHNICAL DATASHEET

Figure 7: Vaillant aroTHERM Plus Technical Datasheet

aroTHERM plus	Unit	3.5kW VWL 35 / 6	5kW VWL 55 / 6	7kW VWL 75 / 6	10kW VWL 105 / 6	12kW VWL 125 / 6
General						
Width	mm	1,100				
Height	mm	765		965	1,565	
Depth	mm	450				
Weight, ready for operation	kg	114		128	194	
Connection, heating circuit		G 1 1/4"				
Rated voltage	V	230 V (+10%/- 15%), 50 Hz, 1~/N/PE				
Rated current, maximum	A	14.3		15.0	23.3	
Fuse size		16			25	
Fuse type	A	C/D				
RCD type		A				
eBUS (2-core communication cable)	mm2	0.75				
Maximum length eBUS cable (communication cable)	m	50				
IP rating		IP 15 B				
Fan, power consumption	W	40			50	
Fan quantity		1			2	
Fan, air flow , maximum	m^3 /h	2,300			5,100	
Heating pump, power consumption	W	2 - 50			3 - 87	
Heating circuit						
Heating water temperature, minimum/maximum	° C	20 - 75				
Basic length of the heating water pipe, maximum, between the outdoor unit and indoor unit	m	20				
Operating pressure, minimum	bar	0.50				
Operating pressure, maximum	bar	3.00				
Volume flow, minimum	l/h	400		540	995	
Volume flow, maximum	l/h	860		1,205	2,065	
Water volume, in the outdoor unit	l	1.5		2.0	2.5	
Water volume, in the heating circuit, minimum, thawing mode, activated/deactivated back-up heater	l	15 / 40		20 / 55	45 / 150	
Remaining feed pressure, hydraulic	kPa (mbar)	56.0 (560.0)		44.0 (440.0)	55.0 (550.0)	

aroTHERM plus	Unit	3.5kW VWL 35 / 6	5kW VWL 55 / 6	7kW VWL 75 / 6	10kW VWL 105 / 6	12kW VWL 125 / 6
Refrigerant circuit						
Fluid type		R290				
Fluid fill quantity	kg	0.6		0.9	1.3	
Refrigerant, Global Warming Potential (GWP)		3				
CO_2 equivalent	t	0.0018		0.0027	0.0039	
Permissable operating pressure	bar	31.5				
Compressor type		Rotary piston			Scroll compressor	
Compressor oil type		Specific polyalkylene glycol (PAG				
Compressor, control		Electronic				

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

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

SCOP and heating output

aroTHERM output		35°C flow		40°C flow		45°C flow		50°C flow		55°C flow	
		Output	SCOP	Output	SCOP	Output	SCOP	Output	SCOP	Output	SCOP
3.5kW	-5°C	4.2	4.41	4.1	4.03	4	3.65	3.9	3.37	3.8	3.10
	-3°C	4.6		4.4		4.3		4.2		4	
	0°C	4.7		4.7		4.6		4.5		4.4	
	2°C	4.9		4.9		4.9		4.7		4.6	
5kW	-5°C	6.3	4.48	6	4.13	5.6	3.77	5.5	3.41	5.4	3.06
	-3°C	6.8		6.4		6.1		5.9		5.8	
	0°C	6.9		6.7		6.6		6.4		6.2	
	2°C	7.1		7		6.9		6.7		6.5	
7kW	-5°C	8.2	4.36	8.1	4.13	8	3.91	7.5	3.65	7	3.39
	-3°C	8.8		8.6		8.4		7.9		7.4	
	0°C	9.5		9.3		9.1		8.6		8.1	
	2°C	10		9.8		9.6		9		8.5	
10kW	-5°C	9.9	5.03	9.7	4.58	9.4	4.13	9.1	3.85	8.8	3.58
	-3°C	10.7		10.3		10		9.6		9.2	
	0°C	11.9		11.6		11.3		10.7		10.2	
	2°C	12.8		12.5		12.1		11.5		10.9	
12kW	-5°C	13.1	4.88	12.8	4.55	12.5	4.21	11.7	3.92	10.8	3.63
	-3°C	13.9		13.4		12.9		12.1		11.2	
	0°C	15.2		14.6		14.1		13.2		12.3	
	2°C	16		15.5		14.9		13.9		13	

12.3. APPENDIX C: VAILLANT AROSTOR TECHNICAL DATASHEET

Figure 8: Vaillant aroSTOR Technical Datasheet

Vaillant is the leading premium brand for sustainable and responsible system solutions, ensuring your customers experience comfort for their home. Our products have high energy efficiency ratings and low emissions, with an enviable reputation for performance, quality and reliability.

Introducing the domestic hot water heat pump with natural refrigerant: The aroSTOR

The aroSTOR range of domestic hot water heat pumps features 200 and 270 litre models.
The range is incredibly efficient and sustainable, using thermal energy to heat hot water. This thermal energy can be collected via an external air duct, or it can recycle hot air from within the room where it's installed, provided there is sufficient ventilation. The only other energy needed is the electricity to run the appliance.

ErP A+

Visit **www.vaillant.co.uk/aroSTOR** to find out more

Technical data

aroSTOR heat pump 200 and 270 litres

	aroSTOR 200 litre	aroSTOR 270 litre
General		
Nominal capacity	200l	270l
Outer diameter	634 mm	634 mm
Height	1,458 mm	1,783 mm
Weight (when empty)	55kg	68kg
Weight (filled)	255kg	338kg
Cylinder material	Stainless steel	Stainless steel
Heat insulation	Polyurethane foam 50 mm	Polyurethane foam 50 mm
Type of electric heater	Immersion / Ti	Immersion / Ti
Thermal losses 55°C	1,61 kW/24h	1,77 kW/24h
DHW temperature range (HP only)	30 to 60°C	30 to 60°C
Max. temperature of DHW HP inlet domestic water	70°C	70°C
Minimal air flow range	320 m3/h	320 m3/h
Nominal air flow range	350 m3/h	350 m3/h
Maximum air flow range (non ducted)	400 m3/h	400 m3/h
Maximum pressure	6 bar	6 bar
Max. hot water temperature (HP + back up heater)	65°C	65°C
Maximum pressure of the T&P relief valve	7 bar	7 bar
Maximum temperature of the T&P relief valve	90°C	90°C
Electrical specifications		
Max. power consumption (HP + back up heater)	1900 watts	1900 watts
Max. power consumption (HP only)	700 watts	700 watts
Voltage and frequency of the product's power supply	230v - 50Hz	230v - 50Hz
Max amperage of the power supply circuit	8 amp	8 amp
Length of the electrical cable supplied	1.5m	1.5m
IP rating	IPX4	IPX4
Nominal heat output of the electric back-up heater	1.2kW	1.2kW
Connections		
Connections for the hot water circuit	M 3/4"	M 3/4"
Connecting the temperature and pressure relief valve	M 3/4"	M 3/4"
Max. flexible air duct length	10m	10m
Max. rigid air duct length	20m	20m
Min. distance between product and adjacent structures	0mm	0mm
Fuse size	13 amp	13 amp
Specifications for the heat pump (in accordance with EN 16147:2017)		
Refrigerant type	R290	R290
Refrigerant volume for complete filling	0.15kg	0.15kg
Minimum and maximum air temperatures	-7 to 35°C	-7 to 35°C
Sound power level	52 dB	52 dB
Coefficient of performance	3.19	3.14
Maximum usable domestic hot water at 54°C	247 litres	349 litres
Full re-heat time at A7	7.04 hr	10.15 hr
(in accordance with EN 16147:2017)		
Tapping profile	L	L
ErP rating (A+ - F)	A+	A+
Seasonal efficiency	132%	130%

12.4. APPENDIX D: SAMPLE SAP SUMMARY INFORMATION SHEETS (BE LEAN)

Summary for Input Data

elmhurst energy

Property Reference	1 BED FLAT EF	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	1 BED FLAT GF
Property	1 BED FLAT GF		

SAP Rating	74 C	**DER**	19.53	**TER**	17.94
Environmental	86 B	**% DER < TER**			-8.86
CO_2 Emissions (t/year)	0.95	**DFEE**	47.05	**TFEE**	47.12
Compliance Check	See BREL	**% DFEE < TFEE**			0.13
% DPER < TPER	-27.02	**DPER**	121.69	**TPER**	95.81

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, End-Terrace	
Position of Flat	Mid-floor flat	
Which Floor	2	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	271.29	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	32.04 m	53.60 m²	2.50 m
1st Storey:	16.88 m	35.46 m²	2.76 m

8.0 Living Area	28.79	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.19	110.00	50.84	43.17	0.00	None	7.67	Enter Gross Area
Communal Wall	Cavity Wall	Cavity wall : dense plaster, AAC block, filled cavity, any outside structure	0.26	70.00	28.39	26.24	2.10	Stairwell Stairwell 1	2.15	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	9.06	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Metal GF	Plasterboard on timber frame	9.00	88.45

10.1 Party Ceilings

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling 1	Precast concrete plank floor (screed laid on insulation), carpeted	30.00	53.60

11.0 Heat Loss Floors

Summary for Input Data

elmhurst energy

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Exposed	Exposed Floor - Solid	Lowest occupied	Other	0.12	None	0.00	75.00	53.60

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Door Side Panel	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door Side Panel	Communal Wall	North	2.15	0
South	Window	Brickwork	South	2.46	0
D02	Patio Door	Brickwork	East	5.22	0

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
E17 Corner (inverted – internal area greater than external area)	Independently assessed	7.95	-0.09	-0.09	Knauf	No
E1 Steel lintel with perforated steel base plate	Independently assessed	5.60	0.06	0.06	HiTherm	No
E3 Sill	Independently assessed	2.10	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	13.20	0.01	0.01	Knauf	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	29.90	0.04	0.04	Knauf	No
E16 Corner (normal)	Independently assessed	15.90	0.05	0.05	Knauf	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	3.42	0.00	0.07		No
E20 Exposed floor (normal)	Table K1 - Default	29.90	0.32	0.32		No
P7 Party Wall - Exposed floor (normal)	Table K1 - Default	3.42	0.48	0.48		No

Y-value	0.10	W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	2
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0

Summary for Input Data

elmhurst energy

Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	m³/(h.m²) @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting: No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	8
Downlight	75.00	10.00	750.00	14

24.0 Main Heating 1	Manufacturer	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Mains gas	
SAP Code	104	
In Winter	88.90	
In Summer	80.30	
Model Name	Gas	
Manufacturer	Gas	
Controls SAP Code	2110	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	
Flow Temperature Value	55.00	
Boiler Interlock	Yes	
Combi boiler type	Standard Combi	
25.0 Main Heating 2	None	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	

28.0 Water Heating

Water Heating	Main Heating 1
SAP Code	901
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery Instantaneous System 1	No
Waste Water Heat Recovery Instantaneous System 2	No
Waste Water Heat Recovery Storage System	No
Solar Panel	No

Summary for Input Data

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	None	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.61	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	1 BED FLAT GF	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	1 BED FLAT GF
Property	1 BED FLAT GF		

SAP Rating	76 C	**DER**	17.40	**TER**	16.22
Environmental	88 B	**% DER < TER**			-7.27
CO_2 Emissions (t/year)	0.85	**DFEE**	37.57	**TFEE**	41.73
Compliance Check	See BREL	**% DFEE < TFEE**			9.95
% DPER < TPER	-28.15	**DPER**	110.22	**TPER**	86.01

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, End-Terrace	
Position of Flat	Ground-floor flat	
Which Floor	1	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	271.29	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	32.04 m	53.60 m²	2.50 m
1st Storey:	16.88 m	35.46 m²	2.76 m

8.0 Living Area	28.79	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.19	110.00	50.84	43.17	0.00	None	7.67	Enter Gross Area
Communal Wall	Cavity Wall	Cavity wall : dense plaster, AAC block, filled cavity, any outside structure	0.26	70.00	28.39	26.24	2.10	Stairwell Stairwell 1	2.15	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	9.06	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Metal GF	Plasterboard on timber frame	9.00	88.45

10.1 Party Ceilings

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling 1	Precast concrete plank floor (screed laid on insulation), carpeted	30.00	53.60

11.0 Heat Loss Floors

Summary for Input Data

elmhurst energy

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Suspended Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	53.60

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Door Side Panel	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door Side Panel	Communal Wall	North	2.15	0
D02	Patio Door	Brickwork	East	5.22	0
South	Window	Brickwork	South	2.46	0

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
E17 Corner (inverted – internal area greater than external area)	Independently assessed	7.95	-0.09	-0.09	Knauf	No
E1 Steel lintel with perforated steel base plate	Independently assessed	5.60	0.06	0.06	HiTherm	No
E3 Sill	Independently assessed	2.10	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	13.20	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Independently assessed	29.90	0.07	0.07	Bison Jetfloor	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	29.90	0.04	0.04	Knauf	No
E16 Corner (normal)	Independently assessed	15.90	0.05	0.05	Knauf	No
P1 Party wall - Ground floor	Independently assessed	3.42	0.05	0.05	Bison Tech	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	3.42	0.00	0.07		No

Y-value	0.03	W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	2
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0

Summary for Input Data

elmhurst energy

Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	m³/(h.m²) @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting: No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	8
Downlight	75.00	10.00	750.00	14

24.0 Main Heating 1	Manufacturer	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Mains gas	
SAP Code	104	
In Winter	88.90	
In Summer	80.30	
Model Name	Gas	
Manufacturer	Gas	
Controls SAP Code	2110	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	
Flow Temperature Value	55.00	
Boiler Interlock	Yes	
Combi boiler type	Standard Combi	
25.0 Main Heating 2	None	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	

28.0 Water Heating

Water Heating	Main Heating 1
SAP Code	901
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery Instantaneous System 1	No
Waste Water Heat Recovery Instantaneous System 2	No
Waste Water Heat Recovery Storage System	No
Solar Panel	No

Summary for Input Data

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	None	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.61	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Property Reference	1 BED FLAT MF	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	1 BED FLAT MF
Property	1 BED FLAT MF		

SAP Rating	77 C	**DER**	15.73	**TER**	13.92
Environmental	89 B	**% DER < TER**			-13.00
CO_2 Emissions (t/year)	0.78	**DFEE**	29.90	**TFEE**	31.31
Compliance Check	See BREL	**% DFEE < TFEE**			4.51
% DPER < TPER	-37.46	**DPER**	101.26	**TPER**	73.67

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, End-Terrace	
Position of Flat	Mid-floor flat	
Which Floor	2	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	236.29	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	32.04 m	53.60 m²	2.50 m
1st Storey:	16.88 m	35.46 m²	2.76 m

8.0 Living Area	28.79	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.19	110.00	50.84	43.17	0.00	None	7.67	Enter Gross Area
Communal Wall	Cavity Wall	Cavity wall : dense plaster, AAC block, filled cavity, any outside structure	0.26	70.00	28.39	26.24	2.10	Stairwell Stairwell 1	2.15	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	9.06	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Metal GF	Plasterboard on timber frame	9.00	88.45

10.1 Party Ceilings

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling 1	Precast concrete plank floor (screed laid on insulation), carpeted	30.00	53.60

11.1 Party Floors

Summary for Input Data

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor 1	Lowest occupied	Precast concrete plank floor (screed laid on insulation), carpeted	40.00	53.60

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Door Side Panel	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door Side Panel	Communal Wall	North	2.15	0
D02	Patio Door	Brickwork	East	5.22	0
South	Window	Brickwork	South	2.46	0

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
E17 Corner (inverted – internal area greater than external area)	Independently assessed	7.95	-0.09	-0.09	Knauf	No
E1 Steel lintel with perforated steel base plate	Independently assessed	5.60	0.06	0.06	HiTherm	No
E3 Sill	Independently assessed	2.10	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	13.20	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Independently assessed	0.00	0.07	0.07	Bison Jetfloor	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	59.80	0.04	0.04	Knauf	No
E16 Corner (normal)	Independently assessed	15.90	0.05	0.05	Knauf	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	6.84	0.00	0.07		No

Y-value	0.04	W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	2
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0

Summary for Input Data

elmhurst energy

Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	m³/(h.m²) @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting: No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	8
Downlight	75.00	10.00	750.00	14

24.0 Main Heating 1	Manufacturer	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Mains gas	
SAP Code	104	
In Winter	88.90	
In Summer	80.30	
Model Name	Gas	
Manufacturer	Gas	
Controls SAP Code	2110	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	
Flow Temperature Value	55.00	
Boiler Interlock	Yes	
Combi boiler type	Standard Combi	
25.0 Main Heating 2	None	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	

28.0 Water Heating

Water Heating	Main Heating 1
SAP Code	901
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery Instantaneous System 1	No
Waste Water Heat Recovery Instantaneous System 2	No
Waste Water Heat Recovery Storage System	No
Solar Panel	No

Summary for Input Data

elmhurst energy

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	None	
Cylinder Stat	Yes	
Cylinder In Heated Space	No	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.61	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	1 BED FLAT TF	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	1 BED FLAT TF
Property	1 BED FLAT TF		

SAP Rating	75 C	**DER**	19.18	**TER**	18.73
Environmental	86 B	**% DER < TER**			-2.40
CO_2 Emissions (t/year)	0.94	**DFEE**	45.33	**TFEE**	53.08
Compliance Check	See BREL	**% DFEE < TFEE**			14.59
% DPER < TPER	-20.36	**DPER**	119.80	**TPER**	99.53

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, End-Terrace	
Position of Flat	Top-floor flat	
Which Floor	3	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	235.29	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	32.04 m	53.60 m²	2.50 m
1st Storey:	16.88 m	35.46 m²	2.76 m

8.0 Living Area	28.79	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.19	110.00	50.84	43.17	0.00	None	7.67	Enter Gross Area
Communal Wall	Cavity Wall	Cavity wall : dense plaster, AAC block, filled cavity, any outside structure	0.26	70.00	28.39	26.24	2.10	Stairwell Stairwell 1	2.15	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	9.06	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Metal GF	Plasterboard on timber frame	9.00	88.45

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Flat Roof	External Flat Roof	Plasterboard, insulated flat roof	0.13	9.00	53.60	53.60	None	0.00	Calculate Wall Area	0.00

Summary for Input Data

elmhurst energy

11.1 Party Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor 1	Lowest occupied	Precast concrete plank floor (screed laid on rubber), carpeted	70.00	53.60

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Door Side Panel	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door Side Panel	Communal Wall	North	2.15	0
D02	Patio Door	Brickwork	East	5.22	0
South	Window	Brickwork	South	2.46	0

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
E17 Corner (inverted – internal area greater than external area)	Independently assessed	7.95	-0.09	-0.09	Knauf	No
E1 Steel lintel with perforated steel base plate	Independently assessed	5.60	0.06	0.06	HiTherm	No
E3 Sill	Independently assessed	2.10	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	13.20	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Independently assessed	0.00	0.07	0.07	Bison Jetfloor	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	29.90	0.04	0.04	Knauf	No
E16 Corner (normal)	Independently assessed	15.90	0.05	0.05	Knauf	No
P1 Party wall - Ground floor	Independently assessed	0.00	0.05	0.05	Bison Tech	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	3.42	0.00	0.07		No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	3.42	0.07	0.07	Knauf	No
E15 Flat roof with parapet	Table K1 - Default	29.90	0.30	0.30		No

Y-value	0.08	W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Configuration	2
Manufacturer SFP	0.15
Duct Type	Rigid
Wet Rooms	2
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0

Summary for Input Data

elmhurst energy

Number of open flues	0	
Number of chimneys/flues attached to closed fire	0	
Number of flues attached to solid fuel boiler	0	
Number of flues attached to other heater	0	
Number of blocked chimneys	0	
Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	m³/(h.m²) @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	
22.0 Lighting		
No Fixed Lighting	No	

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	8
Downlight	75.00	10.00	750.00	14

24.0 Main Heating 1	Manufacturer	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Mains gas	
SAP Code	104	
In Winter	88.90	
In Summer	80.30	
Model Name	Gas	
Manufacturer	Gas	
Controls SAP Code	2110	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	
Flow Temperature Value	55.00	
Boiler Interlock	Yes	
Combi boiler type	Standard Combi	
25.0 Main Heating 2	None	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	
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
Summer Immersion	No
Cold Water Source	From mains
Bath Count	1
Supplementary Immersion	No
Immersion Only Heating Hot Water	No

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	8.00		No	Instantaneous System 1

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	None	
Cylinder Stat	No	
Cylinder In Heated Space	No	
Independent Time Control	No	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.61	kWh/day
In Airing Cupboard	No	
31.0 Thermal Store	None	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	2 BED FLAT GF	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	2 BED FLAT GF
Property	2 BED FLAT GF		

SAP Rating	78 C	**DER**	14.01	**TER**	13.33
Environmental	89 B	**% DER < TER**			-5.10
CO_2 Emissions (t/year)	0.9	**DFEE**	29.46	**TFEE**	33.08
Compliance Check	See BREL	**% DFEE < TFEE**			10.94
% DPER < TPER	-24.96	**DPER**	88.45	**TPER**	70.78

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, Mid-Terrace	
Position of Flat	Ground-floor flat	
Which Floor	1	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	286.30	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	27.60 m	70.97 m²	2.38 m
1st Storey:	26.73 m	39.40 m²	2.76 m
2nd Storey:	26.73 m	39.40 m²	2.76 m

8.0 Living Area	24.75	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.19	110.00	45.41	35.62	0.00	None	9.79	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.26	110.00	7.29	5.17	0.70	Stairwell Access Corridor 3	2.12	Enter Gross Area
Wall to Stairwell/Lift	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.26	110.00	18.55	18.55	2.50	Stairwell Stairwell 2	0.00	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	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	19.50	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Timber Partition	Plasterboard on timber frame	9.00	150.75

10.1 Party Ceilings

Summary for Input Data

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling	Precast concrete plank floor (screed laid on rubber), carpeted	30.00	70.97

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Suspended Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	70.97

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Semi Glazed Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.39		1.00	1.40
Roof Window	Manufacturer	Window	Double Low-E Soft 0.05			0.46		0.70	1.30
Storage Door	Manufacturer	Solid Door				0.00			1.20
Front Solid Door	Manufacturer	Solid Door				0.00			1.00
Single Glazed Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	0
Front Elevation	Window	Brickwork	South	5.03	0
Side Elevation	Window	Brickwork	East	4.77	0

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	5.67	0.06	0.06	HiTherm	No
E3 Sill	Independently assessed	0.00	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	25.20	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Independently assessed	27.60	0.07	0.07	Bison Jetfloor	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	23.78	0.04	0.04	Knauf	No
E16 Corner (normal)	Independently assessed	7.95	0.05	0.05	Knauf	No
E23 Balcony within or between dwellings, balcony support penetrates wall insulation	Independently assessed	3.38	0.17	0.17	Estimated-Sheock Balconies	No
E18 Party wall between dwellings	Non Gov Approved Schemes	2.65	0.04	0.04	RCD	No
P1 Party wall - Ground floor	Independently assessed	7.08	0.05	0.05	Bison Tech	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	7.08	0.00	0.00	Table K1	No
E25 Staggered party wall between dwellings	Non Gov Approved Schemes	2.65	0.03	0.03	RCD	No

Y-value	0.04	W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	3
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

Summary for Input Data

elmhurst energy

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0	
Number of open flues	0	
Number of chimneys/flues attached to closed fire	0	
Number of flues attached to solid fuel boiler	0	
Number of flues attached to other heater	0	
Number of blocked chimneys	0	
Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	

21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	$m^3/(h.m^2)$ @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting: No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	4
Downlight	75.00	10.00	750.00	14
Batten Holder	75.00	10.00	750.00	1

24.0 Main Heating 1	Manufacturer	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Mains gas	
SAP Code	104	
In Winter	88.90	
In Summer	80.30	
Model Name	Gas	
Manufacturer	Gas	
Controls SAP Code	2110	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators	
Underfloor Heating	Yes - Pipes in Concrete	
Flow Temperature	Enter value	
Flow Temperature Value	55.00	
Boiler Interlock	Yes	
Combi boiler type	Standard Combi	
25.0 Main Heating 2	None	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	

28.0 Water Heating

Summary for Input Data

elmhurst energy

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

28.1 Showers

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

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	None	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Insulation Thickness Type	Other	
Insulation Thickness	15	
Cylinder Volume	200.00	L
Loss	1.61	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
Thermal Store Pipework	within a single casing	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	2 BED FLAT MF	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	2 BED FLAT MF
Property	2 BED FLAT MF		

SAP Rating	79 C	**DER**	12.56	**TER**	10.93
Environmental	90 B	**% DER < TER**			-14.91
CO_2 Emissions (t/year)	0.82	**DFEE**	21.57	**TFEE**	22.17
Compliance Check	See BREL	**% DFEE < TFEE**			2.66
% DPER < TPER	-39.42	**DPER**	80.67	**TPER**	57.86

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, Mid-Terrace	
Position of Flat	Mid-floor flat	
Which Floor	1	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	4	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	281.30	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	27.60 m	70.97 m²	2.38 m
1st Storey:	26.73 m	39.40 m²	2.76 m
2nd Storey:	26.73 m	39.40 m²	2.76 m

8.0 Living Area	24.75	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.19	110.00	45.41	35.62	0.00	None	9.79	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.26	110.00	7.29	5.17	0.90	Stairwell Access Corridor 4	2.12	Enter Gross Area
Wall to Stairwell/Lift	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.26	110.00	18.55	18.55	2.50	Stairwell Stairwell 2	0.00	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	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	19.50	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Timber Partition	Plasterboard on timber frame	9.00	150.75

10.1 Party Ceilings

Summary for Input Data

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling	Precast concrete plank floor (screed laid on rubber), carpeted	30.00	70.97

11.1 Party Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor	Lowest occupied	Precast concrete plank floor (screed laid on rubber), carpeted	70.00	70.97

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Semi Glazed Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.39		1.00	1.40
Roof Window	Manufacturer	Window	Double Low-E Soft 0.05			0.46		0.70	1.30
Storage Door	Manufacturer	Solid Door				0.00			1.20
Front Solid Door	Manufacturer	Solid Door				0.00			1.00
Single Glazed Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	0
Front Elevation	Window	Brickwork	South	5.03	0
Side Elevation	Window	Brickwork	East	1.68	0
Side Elevation	Patio Door	Brickwork	East	3.09	0

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	5.67	0.06	0.06	HiTherm	No
E3 Sill	Independently assessed	0.00	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	25.20	0.01	0.01	Knauf	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	47.55	0.04	0.04	Knauf	No
E16 Corner (normal)	Independently assessed	7.95	0.05	0.05	Knauf	No
E23 Balcony within or between dwellings, balcony support penetrates wall insulation	Independently assessed	6.76	0.17	0.17	Estimated-Sheock Balconies	No
E18 Party wall between dwellings	Non Gov Approved Schemes	2.65	0.04	0.04	RCD	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	14.23	0.00	0.00	Table K1	No
E25 Staggered party wall between dwellings	Non Gov Approved Schemes	2.65	0.03	0.03	RCD	No

Y-value	0.06	W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	3
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

Summary for Input Data

elmhurst energy

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0	
Number of open flues	0	
Number of chimneys/flues attached to closed fire	0	
Number of flues attached to solid fuel boiler	0	
Number of flues attached to other heater	0	
Number of blocked chimneys	0	
Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	

21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	$m^3/(h.m^2)$ @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting: No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	4
Downlight	75.00	10.00	750.00	14
Batten Holder	75.00	10.00	750.00	1

24.0 Main Heating 1	Manufacturer	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Mains gas	
SAP Code	104	
In Winter	88.90	
In Summer	80.30	
Model Name	Gas	
Manufacturer	Gas	
Controls SAP Code	2110	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators	
Underfloor Heating	Yes - Pipes in Concrete	
Flow Temperature	Enter value	
Flow Temperature Value	55.00	
Boiler Interlock	Yes	
Combi boiler type	Standard Combi	
25.0 Main Heating 2	None	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	

28.0 Water Heating

Summary for Input Data

elmhurst energy

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

28.1 Showers

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

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	None	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Insulation Thickness Type	Other	
Insulation Thickness	15	
Cylinder Volume	200.00	L
Loss	1.61	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
Thermal Store Pipework	within a single casing	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	2 BED FLAT TF	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	2 BED FLAT TF
Property	2 BED FLAT TF		

SAP Rating	77 C	**DER**	16.12	**TER**	15.92
Environmental	87 B	**% DER < TER**			-1.26
CO_2 Emissions (t/year)	1.02	**DFEE**	39.56	**TFEE**	45.55
Compliance Check	See BREL	**% DFEE < TFEE**			13.15
% DPER < TPER	-17.89	**DPER**	99.71	**TPER**	84.58

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, Semi-Detached	
Position of Flat	Top-floor flat	
Which Floor	4	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	267.66	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	34.21 m	70.51 m²	2.38 m
1st Storey:	26.73 m	39.40 m²	2.76 m
2nd Storey:	26.73 m	39.40 m²	2.76 m

8.0 Living Area	25.31	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.19	110.00	66.09	50.08	0.00	None	16.01	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.26	110.00	3.98	1.86	0.70	Stairwell Access Corridor 3	2.12	Enter Gross Area
Wall to Stairwell	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.26	110.00	11.58	11.58	2.50	Stairwell Stairwell 2	0.00	Enter Gross Area

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Timber Partition	Plasterboard on timber frame	9.00	153.14

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Flat Roof	External Flat Roof	Plasterboard, insulated flat roof	0.13	9.00	70.51	70.51	None	0.00	Enter Gross Area	0.00

10.1 Party Ceilings

Summary for Input Data

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling	Precast concrete plank floor (screed laid on rubber), carpeted	30.00	70.51

11.1 Party Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor	Lowest occupied	Precast concrete plank floor (screed laid on rubber), carpeted	70.00	70.51

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Semi Glazed Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.39		1.00	1.40
Roof Window	Manufacturer	Window	Double Low-E Soft 0.05			0.46		0.70	1.30
Storage Door	Manufacturer	Solid Door				0.00			1.20
Front Solid Door	Manufacturer	Solid Door				0.00			1.00
Single Glazed Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	0
Front Elevation	Window	Brickwork	East	4.76	0
Side Elevation	Window	Brickwork	South	4.76	0
Rear Elevation	Window	Brickwork	West	3.35	0
Side Elevation	Patio Door	Brickwork	South	3.13	0

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	8.63	0.06	0.06	HiTherm	No
E3 Sill	Independently assessed	0.00	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	33.60	0.01	0.01	Knauf	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	30.86	0.04	0.04	Knauf	No
E16 Corner (normal)	Independently assessed	9.52	0.05	0.05	Knauf	No
E23 Balcony within or between dwellings, balcony support penetrates wall insulation	Independently assessed	3.35	0.17	0.17	Estimated-Sheock Balconies	No
E15 Flat roof with parapet	Table K1 - Default	34.15	0.30	0.30		No

Y-value	0.09	W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	3
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Summary for Input Data

elmhurst energy

Number of open chimneys	0	
Number of open flues	0	
Number of chimneys/flues attached to closed fire	0	
Number of flues attached to solid fuel boiler	0	
Number of flues attached to other heater	0	
Number of blocked chimneys	0	
Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	$m^3/(h.m^2)$ @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting: No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	4
Downlight	75.00	10.00	750.00	16
Batten Holder	75.00	10.00	750.00	2

24.0 Main Heating 1	Manufacturer	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Mains gas	
SAP Code	104	
In Winter	88.90	
In Summer	80.30	
Model Name	Gas	
Manufacturer	Gas	
Controls SAP Code	2110	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators	
Underfloor Heating	Yes - Pipes in Concrete	
Flow Temperature	Enter value	
Flow Temperature Value	55.00	
Boiler Interlock	Yes	
Combi boiler type	Standard Combi	
25.0 Main Heating 2	None	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	

28.0 Water Heating

Summary for Input Data

elmhurst energy

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

28.1 Showers

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

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	None	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Insulation Thickness Type	Other	
Insulation Thickness	15	
Cylinder Volume	200.00	L
Loss	1.61	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
Thermal Store Pipework	within a single casing	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	HT-M2.9	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	HT-M2.9
Property	HT-M2.9, HT-M2.9		

SAP Rating	78 C	**DER**	14.69	**TER**	11.90
Environmental	88 B	**% DER < TER**			-23.45
CO_2 Emissions (t/year)	1.12	**DFEE**	33.59	**TFEE**	36.77
Compliance Check	See BREL	**% DFEE < TFEE**			8.64
% DPER < TPER	-45.75	**DPER**	90.71	**TPER**	62.24

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Semi-Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	188.27	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	18.03 m	40.60 m²	2.46 m
1st Storey:	18.03 m	40.60 m²	2.76 m

8.0 Living Area	37.41	m²	

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	94.12	80.11	0.00	None	14.01	Calculate Wall Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	45.88	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Metal GF	Plasterboard on timber frame	9.00	35.67
Metal FF	Plasterboard on timber frame	9.00	67.32

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	40.60	40.60	None	0.00	Calculate Wall Area	0.00

10.2 Internal Ceilings

Description	Storey	Construction	Area (m²)

Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor		40.60

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Suspended Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	40.60

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	18.00	40.60

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door	Brickwork	North	2.15	0
W05	Window	Brickwork	East	0.82	0
W04	Window	Brickwork	South	2.17	0
W03	Window	Brickwork	North	2.17	0
W02	Window	Brickwork	South	0.72	0
W01	Window	Brickwork	North	2.17	0
D02	Patio Door	Brickwork	South	3.80	0

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
E10 Eaves (insulation at ceiling level)	Independently assessed	9.23	0.07	0.07	Knauf	No
E12 Gable (insulation at ceiling level)	Independently assessed	7.90	0.05	0.05	Knauf	No
E1 Steel lintel with perforated steel base plate	Independently assessed	9.63	0.07	0.07	HiTherm	No
E3 Sill	Independently assessed	6.80	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	20.10	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Independently assessed	18.03	0.05	0.05	Bison Jetfloor	No
E6 Intermediate floor within a dwelling	Independently assessed	18.03	0.00	0.00	Knauf	No
E16 Corner (normal)	Independently assessed	10.44	0.04	0.04	Knauf	Yes
E18 Party wall between dwellings	Independently assessed	10.44	0.04	0.04	RCD	Yes
P1 Party wall - Ground floor	Independently assessed	8.79	0.05	0.05	Bison Tech	No
P2 Party wall - Intermediate floor within a dwelling	Independently assessed	8.79	0.00	0.00		No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	8.79	0.07	0.07	Knauf	No

Y-value	0.03	W/m²K

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	500755
Duct Type	Rigid
Wet Rooms	3
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

Summary for Input Data

elmhurst energy

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0	
Number of open flues	0	
Number of chimneys/flues attached to closed fire	0	
Number of flues attached to solid fuel boiler	0	
Number of flues attached to other heater	0	
Number of blocked chimneys	0	
Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	

21.0 Fixed Cooling System	No	

22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	$m^3/(h.m^2)$ @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting: No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	6
Downlight	75.00	10.00	750.00	11

24.0 Main Heating 1	Manufacturer	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Mains gas	
SAP Code	104	
In Winter	88.90	
In Summer	80.30	
Model Name	Gas	
Manufacturer	Gas	
Controls SAP Code	2110	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	
Flow Temperature Value	55.00	
Boiler Interlock	Yes	
Combi boiler type	Standard Combi	

25.0 Main Heating 2	None	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	

28.0 Water Heating

Summary for Input Data

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	9.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	None	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Insulation Thickness Type	Other	
Insulation Thickness	15	
Cylinder Volume	150.00	L
Loss	1.00	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
Thermal Store Pipework	within a single casing	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Property Reference	HT-M3.11	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	HT-M3.11
Property	HT-M3.11, HT-M3.11		

SAP Rating	79 C	**DER**	14.08	**TER**	11.46
Environmental	87 B	**% DER < TER**			-22.86
CO_2 Emissions (t/year)	1.25	**DFEE**	35.57	**TFEE**	38.85
Compliance Check	See BREL	**% DFEE < TFEE**			8.45
% DPER < TPER	-43.00	**DPER**	85.85	**TPER**	60.03

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	3	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	158.67	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	29.06 m	48.47 m²	2.46 m
1st Storey:	29.06 m	48.47 m²	2.76 m

8.0 Living Area	27.46	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	151.89	138.96	0.00	None	12.93	Enter Gross Area

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Steel Partition	Plasterboard on timber frame	9.00	184.85

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	48.47	48.47	None	0.00	Enter Gross Area	0.00

10.2 Internal Ceilings

Description	Storey	Construction	Area (m²)
Internal Ceiling	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	48.47

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	48.47

11.2 Internal Floors

Summary for Input Data

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor		Plasterboard ceiling, carpeted chipboard floor	18.00	48.47

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Door	Manufacturer	Solid Door	Double Low-E Soft 0.1			0.63			1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.39		1.00	1.40
Front Solid Door	Manufacturer	Solid Door				0.00			1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Door	Brickwork	North	2.15	0
Rear Elevation	Patio Door	Brickwork	South	3.33	0
Front Elevation	Window	Brickwork	North	3.78	0
Rear Elevation	Window	Brickwork	South	3.67	0

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	8.96	0.07	0.07	HiTherm	Yes
E3 Sill	Independently assessed	6.33	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	25.20	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Non Gov Approved Schemes	29.06	0.05	0.05	Bison Jetfloor	No
E6 Intermediate floor within a dwelling	Non Gov Approved Schemes	29.06	0.00	0.00	Knauf	No
E16 Corner (normal)	Independently assessed	20.88	0.04	0.04	Knauf	No
E10 Eaves (insulation at ceiling level)	Non Gov Approved Schemes	18.72	0.07	0.07	Knauf	No
E12 Gable (insulation at ceiling level)	Non Gov Approved Schemes	10.36	0.05	0.05	Knauf	No

Y-value	0.02	W/m²K

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	500755	
Duct Type	Rigid	
Wet Rooms	3	
SFP from Installer Commissioning Certificate	No	

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0

Summary for Input Data

elmhurst energy

Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	m³/(h.m²) @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	
22.0 Lighting		
No Fixed Lighting	No	

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	11
Downlighters	75.00	10.00	750.00	8

24.0 Main Heating 1	Manufacturer	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Mains gas	
SAP Code	104	
In Winter	88.90	
In Summer	80.30	
Model Name	Gas	
Manufacturer	Gas	
Controls SAP Code	2110	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	
Flow Temperature Value	55.00	
Boiler Interlock	Yes	
Combi boiler type	Standard Combi	
25.0 Main Heating 2	None	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	
28.0 Water Heating		
Water Heating	Main Heating 1	
SAP Code	901	
Flue Gas Heat Recovery System	No	
Waste Water Heat Recovery Instantaneous System 1	No	
Waste Water Heat Recovery Instantaneous System 2	No	
Waste Water Heat Recovery Storage System	No	
Solar Panel	No	

Summary for Input Data

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	None	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.20	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	HT-M3.12	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	HT-M3.12
Property	HT-M3.12, HT-M3.12		

SAP Rating	80 C	**DER**	13.81	**TER**	11.50
Environmental	88 B	**% DER < TER**			-20.09
CO_2 Emissions (t/year)	1.26	**DFEE**	36.71	**TFEE**	36.75
Compliance Check	See BREL	**% DFEE < TFEE**			0.10
% DPER < TPER	-39.62	**DPER**	84.05	**TPER**	60.20

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Semi-Detached	
Which Floor	0	
2.0 Number of Storeys	3	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	175.37	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	17.37 m	37.67 m²	2.46 m
1st Storey:	17.37 m	37.67 m²	2.76 m
2nd Storey:	16.13 m	25.21 m²	2.53 m

8.0 Living Area	17.76	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	47.91	43.39	0.00	None	4.52	Enter Gross Area
Timber Stud Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	17.16	17.16	0.50	Room In Roof	0.00	Enter Gross Area
Dormer Cheek	Timber Frame	Timber framed wall (one layer of plasterboard)	0.26	9.00	4.51	2.88	0.00	None	1.63	Enter Gross Area
Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	42.70	32.83	0.00	None	9.87	Enter Gross Area
Timber Stud Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	14.00	14.00	0.00	None	0.00	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	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	58.82	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Steel Partition	Plasterboard on timber frame	9.00	155.95

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings

Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	15.67	15.67	None	0.00	Enter Gross Area	0.00
Dormer Roof	External Flat Roof	Plasterboard, insulated flat roof	0.19	9.00	2.32	2.32	None	0.00	Enter Gross Area	0.00
Exposed Ceiling	External Plane Roof	Plasterboard, insulated at ceiling level	0.20	9.00	12.37	12.37	None	0.00	Enter Gross Area	0.00
Sloping Roof	External Slope Roof	Plasterboard, insulated slope	0.16	9.00	10.22	9.44	None	0.00	Enter Gross Area	0.78

10.2 Internal Ceilings

Description	Storey	Construction	Area (m²)
Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	37.67
Internal Ceiling 2	+1	Plasterboard ceiling, carpeted chipboard floor	25.21

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	37.67

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	18.00	37.67
Internal Floor 2		Plasterboard ceiling, carpeted chipboard floor	18.00	25.21

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.39		1.00	1.40
Roof Window	Manufacturer	Roof Window	Double Low-E Soft 0.05			0.46		0.70	1.30
Storage Door	Manufacturer	Solid Door				0.00			1.20
Solid Door	Manufacturer	Solid Door				0.00			1.20
Dormer Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.41		1.00	1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front door	Solid Door	Brickwork	North	2.15	0
Rear Elevation	Patio Door	Brickwork	South	3.33	0
Front Elevation	Window	Brickwork	North	1.90	0
Rear Elevation	Window	Brickwork	South	1.90	0
Rooflight	Roof Window	Sloping Roof	South	0.78	45
Front Elevation	Dormer Window	Dormer Cheek	North	1.63	0
Front Elevation	Window	Brickwork	North	1.23	0
Side Elevation	Window	Brickwork	East	1.95	0
Side Elevation	Window	Brickwork	East	0.72	0
Rear Elevation	Window	Brickwork	South	1.22	0

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
E12 Gable (insulation at ceiling level)	Independently assessed	6.69	0.05	0.05	Knauf	No
E2 Other lintels (including other steel lintels)	Independently assessed	11.58	0.07	0.07	HiTherm	No
E3 Sill	Independently assessed	8.97	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	29.40	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Independently assessed	17.37	0.05	0.05	Bison Jetfloor	No
E6 Intermediate floor within a dwelling	Independently assessed	33.50	0.00	0.00	Knauf	No
E16 Corner (normal)	Independently assessed	4.92	0.04	0.04	Knauf	No
E17 Corner (inverted – internal area greater than external area)	Table K1 - Default	3.52	0.00	0.00	Table K1-Timber/timber	No
R9 Roof to wall (flat ceiling)	Independently assessed	4.80	0.06	0.06	AES	No
R7 Flat ceiling (inverted)	Independently assessed	1.36	0.03	0.03	AES	No
R6 Flat ceiling	Independently assessed	8.71	0.02	0.02	AES	No
R8 Roof to wall (rafter)	Independently assessed	7.38	0.05	0.05	Superglass Insulation	No
R1 Head of roof window	Independently assessed	1.36	0.12	0.12	AES	No
R2 Sill of roof window	Independently assessed	1.36	0.11	0.11	AES	No
R3 Jamb of roof window	Independently assessed	2.40	0.04	0.04	AES	No
E13 Gable (insulation at rafter level)	Independently assessed	1.89	0.09	0.09	AES	No
P1 Party wall - Ground floor	Independently assessed	8.57	0.05	0.05	Bison Tech	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	14.08	0.00	0.00		No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	6.67	0.07	0.07	Knauf	No
P5 Party wall - Roof (insulation at rafter level)	Non Gov Approved Schemes	1.90	0.04	0.04	AES	No
R1 Head of roof window	Independently assessed	0.66	0.12	0.12	AES	No
R2 Sill of roof window	Independently assessed	0.66	0.11	0.11	AES	No
R3 Jamb of roof window	Independently assessed	2.36	0.04	0.04	AES	No
E18 Party wall between dwellings	Independently assessed	4.92	0.04	0.04	RCD	No
E10 Eaves (insulation at ceiling level)	Independently assessed	8.84	0.07	0.07	Knauf	No
E16 Corner (normal)	Table K1 - Default	3.52	0.18	0.18	Table K1-Brick/Timber	No

E16 Corner (normal)	Table K1 - Default	5.08	0.18	0.18	Table K1-Dormer	No
E18 Party wall between dwellings	Table K1 - Default	3.52	0.24	0.24	Table K1-Block/Timber	No
E16 Corner (normal)	Independently assessed	5.52	0.04	0.04	Knauf	No
E18 Party wall between dwellings	Independently assessed	5.52	0.04	0.04	RCD	No

Y-value	0.04	W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	3
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0
Number of intermittent extract fans	0
Number of passive vents	0
Number of flueless gas fires	0

21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	m³/(h.m²) @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting	No

Name	Efficacy	Power	Capacity	Count
Pendants	75.00	10.00	750.00	9
Downlighters	75.00	10.00	750.00	4
Batten Holder	75.00	10.00	750.00	1
Track light Fitting	75.00	10.00	750.00	3
Splash Proof Downlighter	75.00	10.00	750.00	1

24.0 Main Heating 1	Manufacturer	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Mains gas	
SAP Code	104	

In Winter	88.90
In Summer	80.30
Model Name	Gas
Manufacturer	Gas
Controls SAP Code	2110
Delayed Start Stat	Yes
Burner Control	Modulating
HETAS approved System	No
Flue Type	Balanced
Fan Assisted Flue	Yes
Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators
Underfloor Heating	Yes - Pipes in thin screed
Flow Temperature	Enter value
Flow Temperature Value	55.00
Boiler Interlock	Yes
Combi boiler type	Standard Combi

25.0 Main Heating 2 — None

26.0 Heat Networks — None

27.0 Secondary Heating — None

28.0 Water Heating

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder — None

Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Insulation Thickness Type	Other	
Insulation Thickness	15	
Cylinder Volume	200.00	L

Summary for Input Data

Loss	1.20	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
Thermal Store Pipework	within a single casing	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	HT-M3.13	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	HT-M3.13
Property	HT-M3.13, HT-M3.13		

SAP Rating	79 C	**DER**	14.14	**TER**	11.51
Environmental	88 B	**% DER < TER**			-22.85
CO_2 Emissions (t/year)	1.2	**DFEE**	36.86	**TFEE**	39.52
Compliance Check	See BREL	**% DFEE < TFEE**			6.72
% DPER < TPER	-43.31	**DPER**	86.13	**TPER**	60.10

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Semi-Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	179.18	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	19.43 m	46.87 m²	2.46 m
1st Storey:	19.43 m	46.87 m²	2.76 m

8.0 Living Area	15.94	m²	

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	101.42	80.12	0.00	None	21.30	Calculate Wall Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	46.52	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Metal GF	Plasterboard on timber frame	9.00	83.68
Metal FF	Plasterboard on timber frame	9.00	101.73

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	46.87	46.87	None	0.00	Calculate Wall Area	0.00

10.2 Internal Ceilings

Description	Storey	Construction	Area (m²)

Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor		46.87

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Suspended Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	46.87

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	18.00	46.87

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Door	Manufacturer	Solid Door	Double Low-E Soft 0.1			0.63			1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door	Brickwork	North	2.62	0
D02	Patio Door	Brickwork	East	5.22	0
W01	Window	Brickwork	North	1.43	0
W02	Window	Brickwork	North	0.72	0
W03	Window	Brickwork	North	1.63	0
W04	Window	Brickwork	West	1.90	0
W05	Window	Brickwork	East	1.07	0
W06	Window	Brickwork	North	1.63	0
W07	Window	Brickwork	North	0.72	0
W08	Window	Brickwork	North	1.23	0
W09	Window	Brickwork	West	1.90	0
W10	Window	Brickwork	East	1.23	0

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
E10 Eaves (insulation at ceiling level)	Independently assessed	8.92	0.07	0.07	Knauf	No
E12 Gable (insulation at ceiling level)	Independently assessed	10.52	0.05	0.05	Knauf	No
E1 Steel lintel with perforated steel base plate	Independently assessed	14.86	0.07	0.07	HiTherm	No
E3 Sill	Independently assessed	12.38	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	31.20	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Independently assessed	19.43	0.05	0.05	Bison Jetfloor	No
E6 Intermediate floor within a dwelling	Independently assessed	19.43	0.00	0.00	Knauf	No
E16 Corner (normal)	Independently assessed	10.44	0.04	0.04	Knauf	No
E18 Party wall between dwellings	Independently assessed	10.44	0.04	0.04	RCD	No
P1 Party wall - Ground floor	Independently assessed	8.91	0.05	0.05	Bison Tech	No
P2 Party wall - Intermediate floor within a dwelling	Independently assessed	8.91	0.00	0.00		No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	8.91	0.07	0.07	Knauf	No

Y-value	0.03	W/m²K

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	500755
Duct Type	Rigid
Wet Rooms	3
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.15	In Room Fan Kitchen	0
0.15	In Room Fan Other Wet Room	2
0.00	In Duct Fan Kitchen	1

0.00	In Duct Fan Other Wet Room	0
0.11	Through Wall Fan Kitchen	0
0.14	Through Wall Fan Other Wet Room	0

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0
Number of intermittent extract fans	0
Number of passive vents	0
Number of flueless gas fires	0

21.0 Fixed Cooling System	No

22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	$m^3/(h.m^2)$ @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting: No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	8
Downlight	75.00	18.00	1350.00	9

24.0 Main Heating 1	Manufacturer	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Mains gas	
SAP Code	104	
In Winter	88.90	
In Summer	80.30	
Model Name	Gas	
Manufacturer	Gas	
Controls SAP Code	2110	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators	
Underfloor Heating	Yes - Pipes in Concrete	
Flow Temperature	Enter value	
Flow Temperature Value	55.00	
Boiler Interlock	Yes	
Combi boiler type	Standard Combi	

25.0 Main Heating 2	None

Summary for Input Data

elmhurst energy

26.0 Heat Networks	None
27.0 Secondary Heating	None
28.0 Water Heating	
Water Heating	Main Heating 1
SAP Code	901
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery Instantaneous System 1	No
Waste Water Heat Recovery Instantaneous System 2	No
Waste Water Heat Recovery Storage System	No
Solar Panel	No
Water use <= 125 litres/person/day	Yes
Summer Immersion	No
Cold Water Source	From mains
Bath Count	1
Supplementary Immersion	No
Immersion Only Heating Hot Water	No

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	None	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.20	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	HT-M4.11	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	HT-M4.11
Property	HT-M4.11, HT-M4.11		

SAP Rating	81 B	**DER**	13.15	**TER**	11.03
Environmental	88 B	**% DER < TER**			-19.22
CO_2 Emissions (t/year)	1.36	**DFEE**	36.12	**TFEE**	37.79
Compliance Check	See BREL	**% DFEE < TFEE**			4.42
% DPER < TPER	-37.90	**DPER**	79.57	**TPER**	57.70

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Semi-Detached	
Which Floor	0	
2.0 Number of Storeys	3	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	169.73	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	19.28 m	45.48 m²	2.46 m
1st Storey:	19.28 m	45.48 m²	2.76 m
2nd Storey:	18.95 m	22.76 m²	2.40 m

8.0 Living Area	35.35	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	115.27	98.48	0.00	None	16.79	Enter Gross Area
Timber Stud Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	27.41	27.41	0.00	None	0.00	Enter Gross Area
Dormer Cheek	Timber Frame	Timber framed wall (one layer of plasterboard)	0.26	9.00	6.43	5.20	0.00	None	1.23	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	52.40	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Metal GF	Plasterboard on timber frame	9.00	61.76
Metal FF	Plasterboard on timber frame	9.00	104.32
Metal TF	Plasterboard on timber frame	9.00	15.08

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	17.25	17.25	None	0.00	Enter Gross Area	0.00

Sloping Roof	External Slope Roof	Plasterboard, insulated slope	0.16	9.00	7.79	7.79	None	0.00	Enter Gross Area	0.00
Exposed Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.12	9.00	22.73	22.73	None	0.00	Enter Gross Area	0.00
Dormer Roof	External Flat Roof	Plasterboard, insulated flat roof	0.19	9.00	2.56	2.56	None	0.00	Enter Gross Area	0.00

10.2 Internal Ceilings

Description	Storey	Construction	Area (m²)
Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	68.24

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Suspended Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	45.48

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	18.00	68.24

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.39		1.00	1.40
Utility Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Roof Window	Manufacturer	Roof Window	Double glazed			0.46		0.70	1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door	Brickwork	North	2.15	0
D02	Patio Door	Brickwork	South	3.80	0
W01	Window	Brickwork	North	1.43	0
W02	Window	Brickwork	North	0.72	0
W03	Window	Brickwork	South	1.84	0
W04	Window	Brickwork	East	1.23	0
W05	Window	Brickwork	North	1.23	0
W06	Window	Brickwork	North	1.23	0
W07	Window	Brickwork	South	1.23	0
W08	Window	Brickwork	South	1.23	0
W09	Window	Brickwork	East	0.72	0
W10	Window	Dormer Cheek	North	1.23	0

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
E12 Gable (insulation at ceiling level)	Independently assessed	3.28	0.05	0.05	Knauf	No
E1 Steel lintel with perforated steel base plate	Independently assessed	13.06	0.07	0.07	HiTherm	No
E3 Sill	Independently assessed	12.04	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	31.80	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Independently assessed	19.28	0.05	0.05	Bison Jetfloor	No
E6 Intermediate floor within a dwelling	Independently assessed	38.26	0.00	0.00	Knauf	No
E16 Corner (normal)	Independently assessed	24.07	0.04	0.04	Knauf	No
E11 Eaves (insulation at rafter level)	Independently assessed	11.04	0.04	0.04		No
E13 Gable (insulation at rafter level)	Independently assessed	6.72	0.09	0.09	AES	No
E17 Corner (inverted – internal area greater than external area)	Independently assessed	8.09	-0.09	-0.09	Knauf	No
R6 Flat ceiling	Independently assessed	11.82	0.02	0.02	AES	No
R7 Flat ceiling (inverted)	Independently assessed	8.17	0.03	0.03	AES	No
R8 Roof to wall (rafter)	Independently assessed	4.53	0.05	0.05	Superglass Insulation	No
R9 Roof to wall (flat ceiling)	Independently assessed	5.24	0.06	0.06	AES	No
P1 Party wall - Ground floor	Independently assessed	8.24	0.05	0.05	Bison Tech	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	11.20	0.00	0.00		No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	2.50	0.07	0.07	Knauf	No
P5 Party wall - Roof (insulation at rafter level)	Independently assessed	6.72	0.04	0.04	AES	No

Y-value 0.02 W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database

Summary for Input Data

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Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	3
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0
Number of intermittent extract fans	0
Number of passive vents	0
Number of flueless gas fires	0

21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	$m^3/(h.m^2)$ @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting	No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	11
Downlight	75.00	10.00	750.00	13

24.0 Main Heating 1	Manufacturer	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Mains gas	
SAP Code	104	
In Winter	88.90	
In Summer	80.30	
Model Name	Gas	
Manufacturer	Gas	
Controls SAP Code	2110	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Flue Type	Balanced	
Fan Assisted Flue	Yes	

Summary for Input Data

Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators
Underfloor Heating	Yes - Pipes in thin screed
Flow Temperature	Enter value
Flow Temperature Value	55.00
Boiler Interlock	Yes
Combi boiler type	Standard Combi

25.0 Main Heating 2 — None

26.0 Heat Networks — None

27.0 Secondary Heating — None

28.0 Water Heating

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder — None

Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	250.00	L
Loss	1.40	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	Yes	

31.0 Thermal Store — None

34.0 Small-scale Hydro — None

Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Summary for Input Data

Lower cost measures

None

Further measures to achieve even higher standards

None

12.5. APPENDIX E: SAMPLE SAP SUMMARY INFORMATION SHEETS (BE GREEN)

Summary for Input Data

Property Reference	1 BED FLAT EF	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	1 BED FLAT GF
Property	1 BED FLAT GF		

SAP Rating	73 C	**DER**	8.18	**TER**	17.27
Environmental	94 A	**% DER < TER**			52.63
CO_2 Emissions (t/year)	0.38	**DFEE**	47.05	**TFEE**	47.12
Compliance Check	See BREL	**% DFEE < TFEE**			0.13
% DPER < TPER	8.63	**DPER**	84.24	**TPER**	92.20

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, End-Terrace	
Position of Flat	Mid-floor flat	
Which Floor	2	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	0.00	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	32.04 m	53.60 m²	2.50 m
1st Storey:	16.88 m	35.46 m²	2.76 m

8.0 Living Area	28.79	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.19	110.00	50.84	43.17	0.00	None	7.67	Enter Gross Area
Communal Wall	Cavity Wall	Cavity wall : dense plaster, AAC block, filled cavity, any outside structure	0.26	70.00	28.39	26.24	2.10	Stairwell Stairwell 1	2.15	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	9.06	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Metal GF	Plasterboard on timber frame	9.00	88.45

10.1 Party Ceilings

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling 1	Precast concrete plank floor (screed laid on insulation), carpeted	30.00	53.60

11.0 Heat Loss Floors

Summary for Input Data

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Exposed	Exposed Floor - Solid	Lowest occupied	Other	0.12	None	0.00	75.00	53.60

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Door Side Panel	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door Side Panel	Communal Wall	North	2.15	0
South	Window	Brickwork	South	2.46	0
D02	Patio Door	Brickwork	East	5.22	0

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
E17 Corner (inverted – internal area greater than external area)	Independently assessed	7.95	-0.09	-0.09	Knauf	No
E1 Steel lintel with perforated steel base plate	Independently assessed	5.60	0.06	0.06	HiTherm	No
E3 Sill	Independently assessed	2.10	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	13.20	0.01	0.01	Knauf	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	29.90	0.04	0.04	Knauf	No
E16 Corner (normal)	Independently assessed	15.90	0.05	0.05	Knauf	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	3.42	0.00	0.07		No
E20 Exposed floor (normal)	Table K1 - Default	29.90	0.32	0.32		No
P7 Party Wall - Exposed floor (normal)	Table K1 - Default	3.42	0.48	0.48		No

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	2
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0
Number of intermittent extract fans	0

Summary for Input Data

Number of passive vents	0	
Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	m³/(h.m²) @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting: No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	8
Downlight	75.00	10.00	750.00	14

24.0 Main Heating 1	SAP table	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Electricity	
SAP Code	691	
Controls SAP Code	2603	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	
Flow Temperature Value	55.00	
25.0 Main Heating 2	Database	
Percentage of Heat	0.00	%
Database Ref. No.	104014	
Fuel Type	Electricity	
SAP Code	0	
Model Name	aroSTOR 200ltr	
Manufacturer	Vaillant Group UK Ltd	
Controls	2100	
Delayed Start Stat	No	
Burner Control	Modulating	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Flow Temperature	Enter value	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	

28.0 Water Heating

Water Heating	Main Heating 2
SAP Code	914
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery Instantaneous System 1	No

Summary for Input Data

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Hot Water Cylinder	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.61	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Property Reference	1 BED FLAT GF	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	1 BED FLAT GF
Property	1 BED FLAT GF		

SAP Rating	78 C	**DER**	6.72	**TER**	15.56
Environmental	95 A	**% DER < TER**			56.81
CO_2 Emissions (t/year)	0.3	**DFEE**	37.57	**TFEE**	41.73
Compliance Check	See BREL	**% DFEE < TFEE**			9.95
% DPER < TPER	15.88	**DPER**	69.38	**TPER**	82.47

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, End-Terrace	
Position of Flat	Ground-floor flat	
Which Floor	1	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	0.00	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	32.04 m	53.60 m²	2.50 m
1st Storey:	16.88 m	35.46 m²	2.76 m

8.0 Living Area	28.79	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.19	110.00	50.84	43.17	0.00	None	7.67	Enter Gross Area
Communal Wall	Cavity Wall	Cavity wall : dense plaster, AAC block, filled cavity, any outside structure	0.26	70.00	28.39	26.24	2.10	Stairwell Stairwell 1	2.15	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	9.06	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Metal GF	Plasterboard on timber frame	9.00	88.45

10.1 Party Ceilings

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling 1	Precast concrete plank floor (screed laid on insulation), carpeted	30.00	53.60

11.0 Heat Loss Floors

Summary for Input Data

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Suspended Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	53.60

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Door Side Panel	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door Side Panel	Communal Wall	North	2.15	0
D02	Patio Door	Brickwork	East	5.22	0
South	Window	Brickwork	South	2.46	0

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
E17 Corner (inverted – internal area greater than external area)	Independently assessed	7.95	-0.09	-0.09	Knauf	No
E1 Steel lintel with perforated steel base plate	Independently assessed	5.60	0.06	0.06	HiTherm	No
E3 Sill	Independently assessed	2.10	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	13.20	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Independently assessed	29.90	0.07	0.07	Bison Jetfloor	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	29.90	0.04	0.04	Knauf	No
E16 Corner (normal)	Independently assessed	15.90	0.05	0.05	Knauf	No
P1 Party wall - Ground floor	Independently assessed	3.42	0.05	0.05	Bison Tech	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	3.42	0.00	0.07		No

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	2
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0
Number of intermittent extract fans	0

Summary for Input Data

Number of passive vents	0	
Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	m³/(h.m²) @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting: No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	8
Downlight	75.00	10.00	750.00	14

24.0 Main Heating 1	SAP table	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Electricity	
SAP Code	691	
Controls SAP Code	2603	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	
Flow Temperature Value	55.00	
25.0 Main Heating 2	Database	
Percentage of Heat	0.00	%
Database Ref. No.	104014	
Fuel Type	Electricity	
SAP Code	0	
Model Name	aroSTOR 200ltr	
Manufacturer	Vaillant Group UK Ltd	
Controls	2100	
Delayed Start Stat	No	
Burner Control	Modulating	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Flow Temperature	Enter value	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	

28.0 Water Heating

Water Heating	Main Heating 2
SAP Code	914
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery Instantaneous System 1	No

Summary for Input Data

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Hot Water Cylinder	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.61	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Property Reference	1 BED FLAT MF	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	1 BED FLAT MF
Property	1 BED FLAT MF		

SAP Rating	82 B	**DER**	5.55	**TER**	13.33
Environmental	96 A	**% DER < TER**			58.36
CO_2 Emissions (t/year)	0.25	**DFEE**	29.90	**TFEE**	31.31
Compliance Check	See BREL	**% DFEE < TFEE**			4.51
% DPER < TPER	18.55	**DPER**	57.40	**TPER**	70.48

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, End-Terrace	
Position of Flat	Mid-floor flat	
Which Floor	2	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	0.00	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	32.04 m	53.60 m²	2.50 m
1st Storey:	16.88 m	35.46 m²	2.76 m

8.0 Living Area	28.79	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.19	110.00	50.84	43.17	0.00	None	7.67	Enter Gross Area
Communal Wall	Cavity Wall	Cavity wall : dense plaster, AAC block, filled cavity, any outside structure	0.26	70.00	28.39	26.24	2.10	Stairwell Stairwell 1	2.15	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	9.06	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Metal GF	Plasterboard on timber frame	9.00	88.45

10.1 Party Ceilings

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling 1	Precast concrete plank floor (screed laid on insulation), carpeted	30.00	53.60

11.1 Party Floors

Summary for Input Data

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor 1	Lowest occupied	Precast concrete plank floor (screed laid on insulation), carpeted	30.00	53.60

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Door Side Panel	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door Side Panel	Communal Wall	North	2.15	0
D02	Patio Door	Brickwork	East	5.22	0
South	Window	Brickwork	South	2.46	0

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
E17 Corner (inverted – internal area greater than external area)	Independently assessed	7.95	-0.09	-0.09	Knauf	No
E1 Steel lintel with perforated steel base plate	Independently assessed	5.60	0.06	0.06	HiTherm	No
E3 Sill	Independently assessed	2.10	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	13.20	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Independently assessed	0.00	0.07	0.07	Bison Jetfloor	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	59.80	0.04	0.04	Knauf	No
E16 Corner (normal)	Independently assessed	15.90	0.05	0.05	Knauf	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	6.84	0.00	0.07		No

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	2
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0
Number of intermittent extract fans	0

Summary for Input Data

Number of passive vents	0	
Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	m³/(h.m²) @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting: No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	8
Downlight	75.00	10.00	750.00	14

24.0 Main Heating 1	SAP table	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Electricity	
SAP Code	691	
Controls SAP Code	2603	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	
Flow Temperature Value	55.00	
25.0 Main Heating 2	Database	
Percentage of Heat	0.00	%
Database Ref. No.	104014	
Fuel Type	Electricity	
SAP Code	0	
Model Name	aroSTOR 200ltr	
Manufacturer	Vaillant Group UK Ltd	
Controls	2100	
Delayed Start Stat	No	
Burner Control	Modulating	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Flow Temperature	Enter value	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	

28.0 Water Heating

Water Heating	Main Heating 2
SAP Code	914
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery Instantaneous System 1	No

Summary for Input Data

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Hot Water Cylinder	
Cylinder Stat	Yes	
Cylinder In Heated Space	No	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.61	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	1 BED FLAT TF	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	1 BED FLAT TF
Property	1 BED FLAT TF		

SAP Rating	74 C	**DER**	7.92	**TER**	18.08
Environmental	95 A	**% DER < TER**			56.19
CO_2 Emissions (t/year)	0.36	**DFEE**	45.33	**TFEE**	53.08
Compliance Check	See BREL	**% DFEE < TFEE**			14.59
% DPER < TPER	14.96	**DPER**	81.65	**TPER**	96.02

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, End-Terrace	
Position of Flat	Top-floor flat	
Which Floor	3	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	0.00	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	32.04 m	53.60 m²	2.50 m
1st Storey:	16.88 m	35.46 m²	2.76 m

8.0 Living Area	28.79	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.19	110.00	50.84	43.17	0.00	None	7.67	Enter Gross Area
Communal Wall	Cavity Wall	Cavity wall : dense plaster, AAC block, filled cavity, any outside structure	0.26	70.00	28.39	26.24	2.10	Stairwell Stairwell 1	2.15	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	9.06	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Metal GF	Plasterboard on timber frame	9.00	88.45

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Flat Roof	External Flat Roof	Plasterboard, insulated flat roof	0.13	9.00	53.60	53.60	None	0.00	Calculate Wall Area	0.00

Summary for Input Data

elmhurst energy

11.1 Party Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor 1	Lowest occupied	Precast concrete plank floor (screed laid on rubber), carpeted	30.00	53.60

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Door Side Panel	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door Side Panel	Communal Wall	North	2.15	0
D02	Patio Door	Brickwork	East	5.22	0
South	Window	Brickwork	South	2.46	0

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
E17 Corner (inverted – internal area greater than external area)	Independently assessed	7.95	-0.09	-0.09	Knauf	No
E1 Steel lintel with perforated steel base plate	Independently assessed	5.60	0.06	0.06	HiTherm	No
E3 Sill	Independently assessed	2.10	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	13.20	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Independently assessed	0.00	0.07	0.07	Bison Jetfloor	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	29.90	0.04	0.04	Knauf	No
E16 Corner (normal)	Independently assessed	15.90	0.05	0.05	Knauf	No
P1 Party wall - Ground floor	Independently assessed	0.00	0.05	0.05	Bison Tech	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	3.42	0.00	0.07		No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	3.42	0.07	0.07	Knauf	No
E15 Flat roof with parapet	Table K1 - Default	29.90	0.30	0.30		No

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Configuration	2
Manufacturer SFP	0.15
Duct Type	Rigid
Wet Rooms	2
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0

Summary for Input Data

elmhurst energy

Number of flues attached to solid fuel boiler	0	
Number of flues attached to other heater	0	
Number of blocked chimneys	0	
Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	$m^3/(h.m^2)$ @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	
22.0 Lighting		
No Fixed Lighting	No	

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	8
Downlight	75.00	10.00	750.00	14

24.0 Main Heating 1	SAP table	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Electricity	
SAP Code	691	
Controls SAP Code	2603	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	
Flow Temperature Value	55.00	
25.0 Main Heating 2	Database	
Percentage of Heat	0.00	%
Database Ref. No.	104014	
Fuel Type	Electricity	
SAP Code	0	
Model Name	aroSTOR 200ltr	
Manufacturer	Vaillant Group UK Ltd	
Controls	2100	
Delayed Start Stat	No	
Burner Control	Modulating	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Flow Temperature	Enter value	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	
28.0 Water Heating		

Summary for Input Data

elmhurst energy

Water Heating	Main Heating 2
SAP Code	914
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery Instantaneous System 1	No
Waste Water Heat Recovery Instantaneous System 2	No
Waste Water Heat Recovery Storage System	No
Solar Panel	No
Water use <= 125 litres/person/day	Yes
Summer Immersion	No
Cold Water Source	From mains
Bath Count	1
Supplementary Immersion	No
Immersion Only Heating Hot Water	No

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	8.00		No	Instantaneous System 1

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Internal Store	
Cylinder Stat	No	
Cylinder In Heated Space	No	
Independent Time Control	No	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.61	kWh/day
In Airing Cupboard	No	
31.0 Thermal Store	None	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	2 BED FLAT GF	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	2 BED FLAT GF
Property	2 BED FLAT GF		

SAP Rating	81 B	**DER**	5.24	**TER**	12.81
Environmental	96 A	**% DER < TER**			59.09
CO_2 Emissions (t/year)	0.31	**DFEE**	29.46	**TFEE**	33.08
Compliance Check	See BREL	**% DFEE < TFEE**			10.94
% DPER < TPER	20.34	**DPER**	54.12	**TPER**	67.94

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, Mid-Terrace	
Position of Flat	Ground-floor flat	
Which Floor	1	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	0.00	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	27.60 m	70.97 m²	2.38 m
1st Storey:	26.73 m	39.40 m²	2.76 m
2nd Storey:	26.73 m	39.40 m²	2.76 m

8.0 Living Area	24.75	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.19	110.00	45.41	35.62	0.00	None	9.79	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.26	110.00	7.29	5.17	0.70	Stairwell Access Corridor 3	2.12	Enter Gross Area
Wall to Stairwell/Lift	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.26	110.00	18.55	18.55	2.50	Stairwell Stairwell 2	0.00	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	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	19.50	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Timber Partition	Plasterboard on timber frame	9.00	150.75

10.1 Party Ceilings

Summary for Input Data

elmhurst energy

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling	Precast concrete plank floor (screed laid on rubber), carpeted	30.00	70.97

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Suspended Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	70.97

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Semi Glazed Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.39		1.00	1.40
Roof Window	Manufacturer	Window	Double Low-E Soft 0.05			0.46		0.70	1.30
Storage Door	Manufacturer	Solid Door				0.00			1.20
Front Solid Door	Manufacturer	Solid Door				0.00			1.00
Single Glazed Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	0
Front Elevation	Window	Brickwork	South	5.03	0
Side Elevation	Window	Brickwork	East	4.77	0

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	5.67	0.06	0.06	HiTherm	No
E3 Sill	Independently assessed	0.00	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	25.20	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Independently assessed	27.60	0.07	0.07	Bison Jetfloor	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	23.78	0.04	0.04	Knauf	No
E16 Corner (normal)	Independently assessed	7.95	0.05	0.05	Knauf	No
E23 Balcony within or between dwellings, balcony support penetrates wall insulation	Independently assessed	3.38	0.17	0.17	Estimated-Sheock Balconies	No
E18 Party wall between dwellings	Non Gov Approved Schemes	2.65	0.04	0.04	RCD	No
P1 Party wall - Ground floor	Independently assessed	7.08	0.05	0.05	Bison Tech	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	7.08	0.00	0.00	Table K1	No
E25 Staggered party wall between dwellings	Non Gov Approved Schemes	2.65	0.03	0.03	RCD	No

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	3
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0

Summary for Input Data

Number of open flues	0	
Number of chimneys/flues attached to closed fire	0	
Number of flues attached to solid fuel boiler	0	
Number of flues attached to other heater	0	
Number of blocked chimneys	0	
Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	m³/(h.m²) @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting: No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	4
Downlight	75.00	10.00	750.00	14
Batten Holder	75.00	10.00	750.00	1

24.0 Main Heating 1	SAP table	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Electricity	
SAP Code	691	
Controls SAP Code	2605	
Delayed Start Stat	Yes	
Burner Control	On/Off	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in Concrete	
Flow Temperature	Enter value	
Flow Temperature Value	45.00	
25.0 Main Heating 2	Database	
Percentage of Heat	0.00	%
Database Ref. No.	104014	
Fuel Type	Electricity	
SAP Code	0	
Model Name	aroSTOR 200ltr	
Manufacturer	Vaillant Group UK Ltd	
Controls	2100	
Delayed Start Stat	No	
Burner Control	On/Off	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Flow Temperature	Enter value	
26.0 Heat Networks	None	

Summary for Input Data

27.0 Secondary Heating	None
28.0 Water Heating	
Water Heating	Main Heating 2
SAP Code	914
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery Instantaneous System 1	No
Waste Water Heat Recovery Instantaneous System 2	No
Waste Water Heat Recovery Storage System	No
Solar Panel	No
Water use <= 125 litres/person/day	Yes
Summer Immersion	No
Cold Water Source	From mains
Bath Count	1
Supplementary Immersion	No
Immersion Only Heating Hot Water	No

28.1 Showers

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

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Internal Store	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Insulation Thickness Type	Other	
Insulation Thickness	15	
Cylinder Volume	200.00	L
Loss	1.61	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
Thermal Store Pipework	within a single casing	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	2 BED FLAT MF	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	2 BED FLAT MF
Property	2 BED FLAT MF		

SAP Rating	85 B	**DER**	4.22	**TER**	10.46
Environmental	97 A	**% DER < TER**			59.66
CO_2 Emissions (t/year)	0.25	**DFEE**	21.57	**TFEE**	22.17
Compliance Check	See BREL	**% DFEE < TFEE**			2.66
% DPER < TPER	20.95	**DPER**	43.74	**TPER**	55.33

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, Mid-Terrace	
Position of Flat	Mid-floor flat	
Which Floor	1	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	4	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	0.00	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	27.60 m	70.97 m²	2.38 m
1st Storey:	26.73 m	39.40 m²	2.76 m
2nd Storey:	26.73 m	39.40 m²	2.76 m

8.0 Living Area	24.75	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.19	110.00	45.41	35.62	0.00	None	9.79	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.26	110.00	7.29	5.17	0.90	Stairwell Access Corridor 4	2.12	Enter Gross Area
Wall to Stairwell/Lift	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.26	110.00	18.55	18.55	2.50	Stairwell Stairwell 2	0.00	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	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	19.50	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Timber Partition	Plasterboard on timber frame	9.00	150.75

10.1 Party Ceilings

Summary for Input Data

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling	Precast concrete plank floor (screed laid on rubber), carpeted	30.00	70.97

11.1 Party Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor	Lowest occupied	Precast concrete plank floor (screed laid on rubber), carpeted	30.00	70.97

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Semi Glazed Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.39		1.00	1.40
Roof Window	Manufacturer	Window	Double Low-E Soft 0.05			0.46		0.70	1.30
Storage Door	Manufacturer	Solid Door				0.00			1.20
Front Solid Door	Manufacturer	Solid Door				0.00			1.00
Single Glazed Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	0
Front Elevation	Window	Brickwork	South	5.03	0
Side Elevation	Window	Brickwork	East	1.68	0
Side Elevation	Patio Door	Brickwork	East	3.09	0

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	5.67	0.06	0.06	HiTherm	No
E3 Sill	Independently assessed	0.00	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	25.20	0.01	0.01	Knauf	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	47.55	0.04	0.04	Knauf	No
E16 Corner (normal)	Independently assessed	7.95	0.05	0.05	Knauf	No
E23 Balcony within or between dwellings, balcony support penetrates wall insulation	Independently assessed	6.76	0.17	0.17	Estimated-Sheock Balconies	No
E18 Party wall between dwellings	Non Gov Approved Schemes	2.65	0.04	0.04	RCD	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	14.23	0.00	0.00	Table K1	No
E25 Staggered party wall between dwellings	Non Gov Approved Schemes	2.65	0.03	0.03	RCD	No

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	3
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Summary for Input Data

Number of open chimneys	0	
Number of open flues	0	
Number of chimneys/flues attached to closed fire	0	
Number of flues attached to solid fuel boiler	0	
Number of flues attached to other heater	0	
Number of blocked chimneys	0	
Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	$m^3/(h.m^2)$ @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting: No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	4
Downlight	75.00	10.00	750.00	14
Batten Holder	75.00	10.00	750.00	1

24.0 Main Heating 1	SAP table	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Electricity	
SAP Code	691	
Controls SAP Code	2605	
Delayed Start Stat	Yes	
Burner Control	On/Off	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in Concrete	
Flow Temperature	Enter value	
Flow Temperature Value	45.00	
25.0 Main Heating 2	Database	
Percentage of Heat	0.00	%
Database Ref. No.	104014	
Fuel Type	Electricity	
SAP Code	0	
Model Name	aroSTOR 200ltr	
Manufacturer	Vaillant Group UK Ltd	
Controls	2100	
Delayed Start Stat	No	
Burner Control	On/Off	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Flow Temperature	Enter value	

Summary for Input Data

elmhurst energy

26.0 Heat Networks	None
27.0 Secondary Heating	None

28.0 Water Heating

Water Heating	Main Heating 2
SAP Code	914
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery Instantaneous System 1	No
Waste Water Heat Recovery Instantaneous System 2	No
Waste Water Heat Recovery Storage System	No
Solar Panel	No
Water use <= 125 litres/person/day	Yes
Summer Immersion	No
Cold Water Source	From mains
Bath Count	1
Supplementary Immersion	No
Immersion Only Heating Hot Water	No

28.1 Showers

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

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Internal Store	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Insulation Thickness Type	Other	
Insulation Thickness	15	
Cylinder Volume	200.00	L
Loss	1.61	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
Thermal Store Pipework	within a single casing	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	2 BED FLAT TF	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	2 BED FLAT TF
Property	2 BED FLAT TF		

SAP Rating	76 C	**DER**	6.65	**TER**	15.41
Environmental	95 A	**% DER < TER**			56.85
CO_2 Emissions (t/year)	0.39	**DFEE**	39.56	**TFEE**	45.55
Compliance Check	See BREL	**% DFEE < TFEE**			13.15
% DPER < TPER	16.47	**DPER**	68.34	**TPER**	81.82

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, Semi-Detached	
Position of Flat	Top-floor flat	
Which Floor	4	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	0.00	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	34.21 m	70.51 m²	2.38 m
1st Storey:	26.73 m	39.40 m²	2.76 m
2nd Storey:	26.73 m	39.40 m²	2.76 m

8.0 Living Area	25.31	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.19	110.00	66.09	50.08	0.00	None	16.01	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.26	110.00	3.98	1.86	0.70	Stairwell Access Corridor 3	2.12	Enter Gross Area
Wall to Stairwell	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.26	110.00	11.58	11.58	2.50	Stairwell Stairwell 2	0.00	Enter Gross Area

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Timber Partition	Plasterboard on timber frame	9.00	153.14

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Flat Roof	External Flat Roof	Plasterboard, insulated flat roof	0.13	9.00	70.51	70.51	None	0.00	Enter Gross Area	0.00

10.1 Party Ceilings

Summary for Input Data

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling	Precast concrete plank floor (screed laid on rubber), carpeted	30.00	70.51

11.1 Party Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor	Lowest occupied	Precast concrete plank floor (screed laid on rubber), carpeted	30.00	70.51

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Semi Glazed Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.39		1.00	1.40
Roof Window	Manufacturer	Window	Double Low-E Soft 0.05			0.46		0.70	1.30
Storage Door	Manufacturer	Solid Door				0.00			1.20
Front Solid Door	Manufacturer	Solid Door				0.00			1.00
Single Glazed Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	0
Front Elevation	Window	Brickwork	East	4.76	0
Side Elevation	Window	Brickwork	South	4.76	0
Rear Elevation	Window	Brickwork	West	3.35	0
Side Elevation	Patio Door	Brickwork	South	3.13	0

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	8.63	0.06	0.06	HiTherm	No
E3 Sill	Independently assessed	0.00	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	33.60	0.01	0.01	Knauf	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	30.86	0.04	0.04	Knauf	No
E16 Corner (normal)	Independently assessed	9.52	0.05	0.05	Knauf	No
E23 Balcony within or between dwellings, balcony support penetrates wall insulation	Independently assessed	3.35	0.17	0.17	Estimated-Sheock Balconies	No
E15 Flat roof with parapet	Table K1 - Default	34.15	0.30	0.30		No

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	3
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0

Summary for Input Data

elmhurst energy

Number of open flues	0	
Number of chimneys/flues attached to closed fire	0	
Number of flues attached to solid fuel boiler	0	
Number of flues attached to other heater	0	
Number of blocked chimneys	0	
Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	$m^3/(h.m^2)$ @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	
22.0 Lighting		
No Fixed Lighting	No	

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	4
Downlight	75.00	10.00	750.00	16
Batten Holder	75.00	10.00	750.00	2

24.0 Main Heating 1	SAP table	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Electricity	
SAP Code	691	
Controls SAP Code	2605	
Delayed Start Stat	Yes	
Burner Control	On/Off	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in Concrete	
Flow Temperature	Enter value	
Flow Temperature Value	45.00	
25.0 Main Heating 2	Database	
Percentage of Heat	0.00	%
Database Ref. No.	104014	
Fuel Type	Electricity	
SAP Code	0	
Model Name	aroSTOR 200ltr	
Manufacturer	Vaillant Group UK Ltd	
Controls	2100	
Delayed Start Stat	No	
Burner Control	On/Off	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Flow Temperature	Enter value	
26.0 Heat Networks	None	

Summary for Input Data

27.0 Secondary Heating	None
28.0 Water Heating	
Water Heating	Main Heating 2
SAP Code	914
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery Instantaneous System 1	No
Waste Water Heat Recovery Instantaneous System 2	No
Waste Water Heat Recovery Storage System	No
Solar Panel	No
Water use <= 125 litres/person/day	Yes
Summer Immersion	No
Cold Water Source	From mains
Bath Count	1
Supplementary Immersion	No
Immersion Only Heating Hot Water	No

28.1 Showers

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

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Internal Store	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Insulation Thickness Type	Other	
Insulation Thickness	15	
Cylinder Volume	200.00	L
Loss	1.61	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
Thermal Store Pipework	within a single casing	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	HT-M2.9	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	HT-M2.9
Property	HT-M2.9, HT-M2.9, Chelmsford, CM2 0RG		

SAP Rating	86 B	**DER**	3.48	**TER**	11.47
Environmental	97 A	**% DER < TER**			69.66
CO_2 Emissions (t/year)	0.26	**DFEE**	33.59	**TFEE**	36.77
Compliance Check	See BREL	**% DFEE < TFEE**			8.64
% DPER < TPER	39.04	**DPER**	36.52	**TPER**	59.91

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Semi-Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	0.00	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	18.03 m	40.60 m²	2.46 m
1st Storey:	18.03 m	40.60 m²	2.76 m

8.0 Living Area	37.41	m²	

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	94.12	80.11	0.00	None	14.01	Calculate Wall Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	45.88	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Metal GF	Plasterboard on timber frame	9.00	35.67
Metal FF	Plasterboard on timber frame	9.00	67.32

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	40.60	40.60	None	0.00	Calculate Wall Area	0.00

10.2 Internal Ceilings

Description	Storey	Construction	Area (m²)

Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor		40.60

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Suspended Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	40.60

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	9.00	40.60

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door	Brickwork	North	2.15	0
W05	Window	Brickwork	East	0.82	0
W04	Window	Brickwork	South	2.17	0
W03	Window	Brickwork	North	2.17	0
W02	Window	Brickwork	South	0.72	0
W01	Window	Brickwork	North	2.17	0
D02	Patio Door	Brickwork	South	3.80	0

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
E10 Eaves (insulation at ceiling level)	Independently assessed	9.23	0.07	0.07	Knauf	No
E12 Gable (insulation at ceiling level)	Independently assessed	7.90	0.05	0.05	Knauf	No
E1 Steel lintel with perforated steel base plate	Independently assessed	9.63	0.07	0.07	HiTherm	No
E3 Sill	Independently assessed	6.80	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	20.10	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Independently assessed	18.03	0.05	0.05	Bison Jetfloor	No
E6 Intermediate floor within a dwelling	Independently assessed	18.03	0.00	0.00	Knauf	No
E16 Corner (normal)	Independently assessed	10.44	0.04	0.04	Knauf	Yes
E18 Party wall between dwellings	Independently assessed	10.44	0.04	0.04	RCD	Yes
P1 Party wall - Ground floor	Independently assessed	8.79	0.05	0.05	Bison Tech	No
P2 Party wall - Intermediate floor within a dwelling	Independently assessed	8.79	0.00	0.00		No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	8.79	0.07	0.07	Knauf	No

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	500755
Duct Type	Rigid
Wet Rooms	3
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Summary for Input Data

elmhurst energy

Number of open chimneys	0	
Number of open flues	0	
Number of chimneys/flues attached to closed fire	0	
Number of flues attached to solid fuel boiler	0	
Number of flues attached to other heater	0	
Number of blocked chimneys	0	
Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	$m^3/(h.m^2)$ @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting: No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	6
Downlight	75.00	10.00	750.00	11

24.0 Main Heating 1	Database	
Percentage of Heat	100.00	%
Database Ref. No.	104432	
Fuel Type	Electricity	
SAP Code	0	
Model Name	aroTHERM plus 7kW + AI	
Manufacturer	Vaillant Group UK Ltd	
Controls SAP Code	2207	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	
Flow Temperature Value	45.00	
25.0 Main Heating 2	None	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	

28.0 Water Heating

Water Heating	Main Heating 1
SAP Code	901
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery Instantaneous System 1	No
Waste Water Heat Recovery Instantaneous System 2	No
Waste Water Heat Recovery Storage System	No
Solar Panel	No

Summary for Input Data

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	9.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Hot Water Cylinder	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Insulation Thickness Type	Other	
Insulation Thickness	15	
Cylinder Volume	150.00	L
Loss	1.00	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	

31.0 Thermal Store	None	
Thermal Store Pipework	within a single casing	

34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Property Reference	HT-M3.11	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	HT-M3.11
Property	HT-M3.11, HT-M3.11		

SAP Rating	84 B	**DER**	3.78	**TER**	11.20
Environmental	97 A	**% DER < TER**			66.25
CO_2 Emissions (t/year)	0.34	**DFEE**	35.57	**TFEE**	38.85
Compliance Check	See BREL	**% DFEE < TFEE**			8.45
% DPER < TPER	32.55	**DPER**	39.56	**TPER**	58.65

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	3	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	0.00	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	29.06 m	48.47 m²	2.46 m
1st Storey:	29.06 m	48.47 m²	2.76 m

8.0 Living Area	27.46	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	151.89	138.96	0.00	None	12.93	Enter Gross Area

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Steel Partition	Plasterboard on timber frame	9.00	184.85

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	48.47	48.47	None	0.00	Enter Gross Area	0.00

10.2 Internal Ceilings

Description	Storey	Construction	Area (m²)
Internal Ceiling	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	48.47

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	48.47

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	48.47

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Door	Manufacturer	Solid Door	Double Low-E Soft 0.1			0.63			1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.39		1.00	1.40
Front Solid Door	Manufacturer	Solid Door				0.00			1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Door	Brickwork	North	2.15	0
Rear Elevation	Patio Door	Brickwork	South	3.33	0
Front Elevation	Window	Brickwork	North	3.78	0
Rear Elevation	Window	Brickwork	South	3.67	0

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	8.96	0.07	0.07	HiTherm	Yes
E3 Sill	Independently assessed	6.33	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	25.20	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Non Gov Approved Schemes	29.06	0.05	0.05	Bison Jetfloor	No
E6 Intermediate floor within a dwelling	Non Gov Approved Schemes	29.06	0.00	0.00	Knauf	No
E16 Corner (normal)	Independently assessed	20.88	0.04	0.04	Knauf	No
E10 Eaves (insulation at ceiling level)	Non Gov Approved Schemes	18.72	0.07	0.07	Knauf	No
E12 Gable (insulation at ceiling level)	Non Gov Approved Schemes	10.36	0.05	0.05	Knauf	No

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	500755
Duct Type	Rigid
Wet Rooms	3
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0
Number of intermittent extract fans	0
Number of passive vents	0

Summary for Input Data

Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	m³/(h.m²) @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	
22.0 Lighting		
No Fixed Lighting	No	

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	11
Downlighters	75.00	10.00	750.00	8

24.0 Main Heating 1	Database	
Description	AS`HP	
Percentage of Heat	100.00	%
Database Ref. No.	104416	
Fuel Type	Electricity	
SAP Code	0	
Model Name	aroTHERM plus 5kW + AI	
Manufacturer	Vaillant Group UK Ltd	
Controls SAP Code	2207	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	
Flow Temperature Value	45.00	
25.0 Main Heating 2	None	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	
28.0 Water Heating		
Water Heating	Main Heating 1	
SAP Code	901	
Flue Gas Heat Recovery System	No	
Waste Water Heat Recovery Instantaneous System 1	No	
Waste Water Heat Recovery Instantaneous System 2	No	
Waste Water Heat Recovery Storage System	No	
Solar Panel	No	
Water use <= 125 litres/person/day	Yes	
Summer Immersion	No	
Cold Water Source	From mains	
Bath Count	1	
Supplementary Immersion	No	
Immersion Only Heating Hot Water	No	
28.1 Showers		

Summary for Input Data

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Hot Water Cylinder	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.20	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	HT-M3.12	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	HT-M3.12
Property	HT-M3.12, HT-M3.12		

SAP Rating	83 B	**DER**	4.01	**TER**	11.25
Environmental	96 A	**% DER < TER**			64.36
CO_2 Emissions (t/year)	0.36	**DFEE**	36.71	**TFEE**	36.75
Compliance Check	See BREL	**% DFEE < TFEE**			0.10
% DPER < TPER	28.97	**DPER**	41.83	**TPER**	58.89

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Semi-Detached	
Which Floor	0	
2.0 Number of Storeys	3	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	0.00	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	17.37 m	37.67 m²	2.46 m
1st Storey:	17.37 m	37.67 m²	2.76 m
2nd Storey:	16.13 m	25.21 m²	2.53 m

8.0 Living Area	17.76	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	47.91	43.39	0.00	None	4.52	Enter Gross Area
Timber Stud Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	17.16	17.16	0.50	Room In Roof	0.00	Enter Gross Area
Dormer Cheek	Timber Frame	Timber framed wall (one layer of plasterboard)	0.26	9.00	4.51	2.88	0.00	None	1.63	Enter Gross Area
Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	42.70	32.83	0.00	None	9.87	Enter Gross Area
Timber Stud Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	14.00	14.00	0.00	None	0.00	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	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	58.82	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Steel Partition	Plasterboard on timber frame	9.00	155.95

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings

Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	15.67	15.67	None	0.00	Enter Gross Area	0.00
Dormer Roof	External Flat Roof	Plasterboard, insulated flat roof	0.19	9.00	2.32	2.32	None	0.00	Enter Gross Area	0.00
Exposed Ceiling	External Plane Roof	Plasterboard, insulated at ceiling level	0.20	9.00	12.37	12.37	None	0.00	Enter Gross Area	0.00
Sloping Roof	External Slope Roof	Plasterboard, insulated slope	0.16	9.00	10.22	9.44	None	0.00	Enter Gross Area	0.78

10.2 Internal Ceilings

Description	Storey	Construction	Area (m²)
Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	37.67
Internal Ceiling 2	+1	Plasterboard ceiling, carpeted chipboard floor	25.21

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	37.67

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	9.00	37.67
Internal Floor 2		Plasterboard ceiling, carpeted chipboard floor	9.00	25.21

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.39		1.00	1.40
Roof Window	Manufacturer	Roof Window	Double Low-E Soft 0.05			0.46		0.70	1.30
Storage Door	Manufacturer	Solid Door				0.00			1.20
Solid Door	Manufacturer	Solid Door				0.00			1.20
Dormer Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.41		1.00	1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front door	Solid Door	Brickwork	North	2.15	0
Rear Elevation	Patio Door	Brickwork	South	3.33	0
Front Elevation	Window	Brickwork	North	1.90	0
Rear Elevation	Window	Brickwork	South	1.90	0
Rooflight	Roof Window	Sloping Roof	South	0.78	45
Front Elevation	Dormer Window	Dormer Cheek	North	1.63	0
Front Elevation	Window	Brickwork	North	1.23	0
Side Elevation	Window	Brickwork	East	1.95	0
Side Elevation	Window	Brickwork	East	0.72	0
Rear Elevation	Window	Brickwork	South	1.22	0

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
E12 Gable (insulation at ceiling level)	Independently assessed	6.69	0.05	0.05	Knauf	No
E2 Other lintels (including other steel lintels)	Independently assessed	11.58	0.07	0.07	HiTherm	No
E3 Sill	Independently assessed	8.97	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	29.40	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Independently assessed	17.37	0.05	0.05	Bison Jetfloor	No
E6 Intermediate floor within a dwelling	Independently assessed	33.50	0.00	0.00	Knauf	No
E16 Corner (normal)	Independently assessed	4.92	0.04	0.04	Knauf	No
E17 Corner (inverted – internal area greater than external area)	Table K1 - Default	3.52	0.00	0.00	Table K1-Timber/timber	No
R9 Roof to wall (flat ceiling)	Independently assessed	4.80	0.06	0.06	AES	No
R7 Flat ceiling (inverted)	Independently assessed	1.36	0.03	0.03	AES	No
R6 Flat ceiling	Independently assessed	8.71	0.02	0.02	AES	No
R8 Roof to wall (rafter)	Independently assessed	7.38	0.05	0.05	Superglass Insulation	No
R1 Head of roof window	Independently assessed	1.36	0.12	0.12	AES	No
R2 Sill of roof window	Independently assessed	1.36	0.11	0.11	AES	No
R3 Jamb of roof window	Independently assessed	2.40	0.04	0.04	AES	No
E13 Gable (insulation at rafter level)	Independently assessed	1.89	0.09	0.09	AES	No
P1 Party wall - Ground floor	Independently assessed	8.57	0.05	0.05	Bison Tech	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	14.08	0.00	0.00		No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	6.67	0.07	0.07	Knauf	No
P5 Party wall - Roof (insulation at rafter level)	Non Gov Approved Schemes	1.90	0.04	0.04	AES	No
R1 Head of roof window	Independently assessed	0.66	0.12	0.12	AES	No
R2 Sill of roof window	Independently assessed	0.66	0.11	0.11	AES	No
R3 Jamb of roof window	Independently assessed	2.36	0.04	0.04	AES	No
E18 Party wall between dwellings	Independently assessed	4.92	0.04	0.04	RCD	No
E10 Eaves (insulation at ceiling level)	Independently assessed	8.84	0.07	0.07	Knauf	No
E16 Corner (normal)	Table K1 - Default	3.52	0.18	0.18	Table K1-Brick/Timber	No

E16 Corner (normal)	Table K1 - Default	5.08	0.18	0.18	Table K1-Dormer	No
E18 Party wall between dwellings	Table K1 - Default	3.52	0.24	0.24	Table K1-Block/Timber	No
E16 Corner (normal)	Independently assessed	5.52	0.04	0.04	Knauf	No
E18 Party wall between dwellings	Independently assessed	5.52	0.04	0.04	RCD	No

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	3
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0
Number of intermittent extract fans	0
Number of passive vents	0
Number of flueless gas fires	0

21.0 Fixed Cooling System

No

22.0 Pressure Testing

Yes

Designed AP_{50}	4.50	$m^3/(h.m^2)$ @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting: No

Name	Efficacy	Power	Capacity	Count
Pendants	75.00	10.00	750.00	9
Downlighters	75.00	10.00	750.00	4
Batten Holder	75.00	10.00	750.00	1
Track light Fitting	75.00	10.00	750.00	3
Splash Proof Downlighter	75.00	10.00	750.00	1

24.0 Main Heating 1

Database

Description	ASHP	
Percentage of Heat	100.00	%
Database Ref. No.	108467	
Fuel Type	Electricity	
SAP Code	0	

Summary for Input Data

Model Name	aroTHERM plus 3.5kW & AI 200l	
Manufacturer	Vaillant Group UK Ltd	
Controls SAP Code	2207	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	
Flow Temperature Value	45.00	
25.0 Main Heating 2	None	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	
28.0 Water Heating		
Water Heating	Main Heating 1	
SAP Code	901	
Flue Gas Heat Recovery System	No	
Waste Water Heat Recovery Instantaneous System 1	No	
Waste Water Heat Recovery Instantaneous System 2	No	
Waste Water Heat Recovery Storage System	No	
Solar Panel	No	
Water use <= 125 litres/person/day	Yes	
Summer Immersion	No	
Cold Water Source	From mains	
Bath Count	1	
Supplementary Immersion	No	
Immersion Only Heating Hot Water	No	

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Hot Water Cylinder	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Insulation Thickness Type	Other	
Insulation Thickness	15	
Cylinder Volume	200.00	L
Loss	1.20	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
Thermal Store Pipework	within a single casing	

Summary for Input Data

34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	HT-M3.13	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	HT-M3.13
Property	HT-M3.13, HT-M3.13		

SAP Rating	84 B	**DER**	3.89	**TER**	11.24
Environmental	97 A	**% DER < TER**			65.39
CO_2 Emissions (t/year)	0.33	**DFEE**	36.86	**TFEE**	39.52
Compliance Check	See BREL	**% DFEE < TFEE**			6.72
% DPER < TPER	30.88	**DPER**	40.55	**TPER**	58.67

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Semi-Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	0.00	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	19.43 m	46.87 m²	2.46 m
1st Storey:	19.43 m	46.87 m²	2.76 m

8.0 Living Area	15.94	m²	

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	101.42	80.12	0.00	None	21.30	Calculate Wall Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	46.52	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Metal GF	Plasterboard on timber frame	9.00	83.68
Metal FF	Plasterboard on timber frame	9.00	101.73

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	46.87	46.87	None	0.00	Calculate Wall Area	0.00

10.2 Internal Ceilings

Description	Storey	Construction	Area (m²)

Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor		46.87

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Suspended Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	46.87

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	9.00	46.87

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Door	Manufacturer	Solid Door	Double Low-E Soft 0.1			0.63			1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.39		1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door	Brickwork	North	2.62	0
D02	Patio Door	Brickwork	East	5.22	0
W01	Window	Brickwork	North	1.43	0
W02	Window	Brickwork	North	0.72	0
W03	Window	Brickwork	North	1.63	0
W04	Window	Brickwork	West	1.90	0
W05	Window	Brickwork	East	1.07	0
W06	Window	Brickwork	North	1.63	0
W07	Window	Brickwork	North	0.72	0
W08	Window	Brickwork	North	1.23	0
W09	Window	Brickwork	West	1.90	0
W10	Window	Brickwork	East	1.23	0

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
E10 Eaves (insulation at ceiling level)	Independently assessed	8.92	0.07	0.07	Knauf	No
E12 Gable (insulation at ceiling level)	Independently assessed	10.52	0.05	0.05	Knauf	No
E1 Steel lintel with perforated steel base plate	Independently assessed	14.86	0.07	0.07	HiTherm	No
E3 Sill	Independently assessed	12.38	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	31.20	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Independently assessed	19.43	0.05	0.05	Bison Jetfloor	No
E6 Intermediate floor within a dwelling	Independently assessed	19.43	0.00	0.00	Knauf	No
E16 Corner (normal)	Independently assessed	10.44	0.04	0.04	Knauf	No
E18 Party wall between dwellings	Independently assessed	10.44	0.04	0.04	RCD	No
P1 Party wall - Ground floor	Independently assessed	8.91	0.05	0.05	Bison Tech	No
P2 Party wall - Intermediate floor within a dwelling	Independently assessed	8.91	0.00	0.00		No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	8.91	0.07	0.07	Knauf	No

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	500755
Duct Type	Rigid
Wet Rooms	3
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.15	In Room Fan Kitchen	0
0.15	In Room Fan Other Wet Room	2
0.00	In Duct Fan Kitchen	1
0.00	In Duct Fan Other Wet Room	0

0.11	Through Wall Fan Kitchen	0
0.14	Through Wall Fan Other Wet Room	0

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0
Number of intermittent extract fans	0
Number of passive vents	0
Number of flueless gas fires	0

21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	$m^3/(h.m^2)$ @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting	No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	8
Downlight	75.00	18.00	1350.00	9

24.0 Main Heating 1	Database	
Percentage of Heat	100.00	%
Database Ref. No.	104416	
Fuel Type	Electricity	
SAP Code	0	
Model Name	aroTHERM plus 5kW + AI	
Manufacturer	Vaillant Group UK Ltd	
Controls SAP Code	2207	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in Concrete	
Flow Temperature	Enter value	
Flow Temperature Value	45.00	
25.0 Main Heating 2	None	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	

28.0 Water Heating

Water Heating	Main Heating 1
SAP Code	901
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery Instantaneous System 1	No

Summary for Input Data

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Hot Water Cylinder	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.20	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	
31.0 Thermal Store	None	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

elmhurst energy

Property Reference	HT-M4.11	**Issued on Date**	31/07/2025
Assessment Reference	001	**Prop Type Ref**	HT-M4.11
Property	HT-M4.11, HT-M4.11		

SAP Rating	85 B	**DER**	3.38	**TER**	10.88
Environmental	97 A	**% DER < TER**			68.93
CO_2 Emissions (t/year)	0.35	**DFEE**	36.12	**TFEE**	37.79
Compliance Check	See BREL	**% DFEE < TFEE**			4.42
% DPER < TPER	38.04	**DPER**	35.25	**TPER**	56.88

Assessor Details	Mr. Matthew Fitzpatrick	**Assessor ID**	7601-0001
Client			

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

Orientation	North	
Property Tenture	1	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Semi-Detached	
Which Floor	0	
2.0 Number of Storeys	3	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	0.00	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	19.28 m	45.48 m²	2.46 m
1st Storey:	19.28 m	45.48 m²	2.76 m
2nd Storey:	18.95 m	22.76 m²	2.40 m

8.0 Living Area	35.35	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	115.27	98.48	0.00	None	16.79	Enter Gross Area
Timber Stud Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.21	9.00	27.41	27.41	0.00	None	0.00	Enter Gross Area
Dormer Cheek	Timber Frame	Timber framed wall (one layer of plasterboard)	0.26	9.00	6.43	5.20	0.00	None	1.23	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	52.40	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Metal GF	Plasterboard on timber frame	9.00	61.76
Metal FF	Plasterboard on timber frame	9.00	104.32
Metal TF	Plasterboard on timber frame	9.00	15.08

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	17.25	17.25	None	0.00	Enter Gross Area	0.00

Sloping Roof	External Slope Roof	Plasterboard, insulated slope	0.16	9.00	7.79	7.79	None	0.00	Enter Gross Area	0.00
Exposed Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.12	9.00	22.73	22.73	None	0.00	Enter Gross Area	0.00
Dormer Roof	External Flat Roof	Plasterboard, insulated flat roof	0.19	9.00	2.56	2.56	None	0.00	Enter Gross Area	0.00

10.2 Internal Ceilings

Description	Storey	Construction	Area (m²)
Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	68.24

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Suspended Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	45.48

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	9.00	68.24

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.41		1.00	1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.39		1.00	1.40
Utility Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.20
Roof Window	Manufacturer	Roof Window	Double glazed			0.46		0.70	1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door	Brickwork	North	2.15	0
D02	Patio Door	Brickwork	South	3.80	0
W01	Window	Brickwork	North	1.43	0
W02	Window	Brickwork	North	0.72	0
W03	Window	Brickwork	South	1.84	0
W04	Window	Brickwork	East	1.23	0
W05	Window	Brickwork	North	1.23	0
W06	Window	Brickwork	North	1.23	0
W07	Window	Brickwork	South	1.23	0
W08	Window	Brickwork	South	1.23	0
W09	Window	Brickwork	East	0.72	0
W10	Window	Dormer Cheek	North	1.23	0

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
E12 Gable (insulation at ceiling level)	Independently assessed	3.28	0.05	0.05	Knauf	No
E1 Steel lintel with perforated steel base plate	Independently assessed	13.06	0.07	0.07	HiTherm	No
E3 Sill	Independently assessed	12.04	0.02	0.02	Knauf	No
E4 Jamb	Independently assessed	31.80	0.01	0.01	Knauf	No
E5 Ground floor (normal)	Independently assessed	19.28	0.05	0.05	Bison Jetfloor	No
E6 Intermediate floor within a dwelling	Independently assessed	38.26	0.00	0.00	Knauf	No
E16 Corner (normal)	Independently assessed	24.07	0.04	0.04	Knauf	No
E11 Eaves (insulation at rafter level)	Independently assessed	11.04	0.04	0.04		No
E13 Gable (insulation at rafter level)	Independently assessed	6.72	0.09	0.09	AES	No
E17 Corner (inverted – internal area greater than external area)	Independently assessed	8.09	-0.09	-0.09	Knauf	No
R6 Flat ceiling	Independently assessed	11.82	0.02	0.02	AES	No
R7 Flat ceiling (inverted)	Independently assessed	8.17	0.03	0.03	AES	No
R8 Roof to wall (rafter)	Independently assessed	4.53	0.05	0.05	Superglass Insulation	No
R9 Roof to wall (flat ceiling)	Independently assessed	5.24	0.06	0.06	AES	No
P1 Party wall - Ground floor	Independently assessed	8.24	0.05	0.05	Bison Tech	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	11.20	0.00	0.00		No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	2.50	0.07	0.07	Knauf	No
P5 Party wall - Roof (insulation at rafter level)	Independently assessed	6.72	0.04	0.04	AES	No

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

elmhurst energy

MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	3
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0
Number of intermittent extract fans	0
Number of passive vents	0
Number of flueless gas fires	0

21.0 Fixed Cooling System	No

22.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	$m^3/(h.m^2)$ @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting: No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	11
Downlight	75.00	10.00	750.00	13

24.0 Main Heating 1	Database	
Percentage of Heat	100.00	%
Database Ref. No.	104436	
Fuel Type	Electricity	
SAP Code	0	
Model Name	aroTHERM plus 7kW + AI	
Manufacturer	Vaillant Group UK Ltd	
Controls SAP Code	2207	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	

Summary for Input Data

Flow Temperature Value	45.00
25.0 Main Heating 2	None
26.0 Heat Networks	None
27.0 Secondary Heating	None

28.0 Water Heating

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Bathroom	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Hot Water Cylinder	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	250.00	L
Loss	1.40	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	Yes	
31.0 Thermal Store	None	
34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None