



Energy & Sustainability Statement

Padnell Grange
Padnell Road
Waterlooville
Hampshire
PO8 8ED

Stonebond Properties (Guildford) Ltd and
The Borrow Foundation

Report No: PA-ES-SB-PG-26-01

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1. PROJECT DETAILS

Item	Details
Project Name	Padnell Grange
Project Address	Padnell Grange, Padnell, Waterlooville, Hampshire, PO8 8ED
Project Description	Full planning application for the demolition of existing buildings and the erection of 90 residential dwellings with upgraded access to Padnell Road, associated landscaping and other works
Applicants	Stonebond Properties (Guildford) Ltd and the Borrow Foundation
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2. EXECUTIVE SUMMARY

Introduction

This Energy & Sustainability Statement has been prepared by Abbey Consultants (Southern) Ltd on behalf of Stonebond Properties (Guildford) Ltd and the Borrow Foundation (the 'Applicants' hereafter) to accompany the submission of a full planning application for the proposed development at Padnell Grange, Padnell, Waterlooville, Hampshire, PO8 8ED (hereafter 'the site').

The proposal encompasses:

"Full planning application for the demolition of existing buildings and the erection of 90 residential dwellings with upgraded access to Padnell Road, associated landscaping and other works"

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 May and July 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 to 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 recognises the forthcoming Future Homes Standard and its potential implications for the development. However, as the construction programme has not yet been defined, it is currently uncertain whether the Standard will apply to the scheme. As the project progresses to detailed design and the delivery programme becomes clearer, this strategy should be reviewed and refined to reflect the latest regulatory requirements and technological advancements, ensuring full compliance and the adoption of best available solutions at the time of implementation.

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 CO₂ emissions savings

Stage of Energy Hierarchy	Regulated CO ₂ Emissions (tonnes/year)
Total Part L 2021 Baseline	93.13
Total After 'Be Lean'	92.09
Total After 'Be Green'	31.13
Total Saving	62.00
Total Improvement	67%

After all of the measures in the energy strategy have been accounted for, the proposed development achieves an overall on-site reduction of 67% in regulated carbon dioxide emissions over Part L 2021. This equates to an annual saving of an estimated 62.00 tonnes in regulated CO₂ 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 incorporate 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.
- 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.
- 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) Ltd and the Borrow Foundation in support of the full planning application for the proposed development at Padnell Grange, Padnell, Waterlooville, Hampshire, PO8 8ED.

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

The proposed development for this planning application is described below:

“Full planning application for the demolition of existing buildings and the erection of 90 residential dwellings with upgraded access to Padnell Road, associated landscaping and other works”

Figure 1 below 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 CO₂ 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 CO₂ 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 a 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

4.2.1. HAVANT BOROUGH CORE STRATEGY (ADOPTED MARCH 2011)

The Havant Borough Core Strategy forms part of the adopted development plan for the Borough and sets out the overarching spatial vision, strategic objectives, and planning policies to guide development. The Core Strategy includes policies relating to sustainable development, climate change mitigation, and resource efficiency, promoting development that minimises energy demand and supports the use of low and zero carbon technologies. The planning policies that are of relevance to this report have been reproduced below.

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:
 - a. Residential development – Level 3 of the Code for Sustainable Homes;
 - b. Multi-occupation homes and non-residential development over 500sqm – BREEAM standard 'very good'.
 - c. Improvements to these standards throughout the plan period will be encouraged.
 - d. 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.

4.2.2. EMERGING LOCAL PLAN

The emerging Local Plan for Havant Borough Council, titled the Building a Better Future Plan, is currently in preparation and remains at an early stage. A Regulation 18 consultation was undertaken between May and July 2025, and the Council is now reviewing representations and updating the evidence base to inform the next stage of plan-making.

The Council is progressing towards a Regulation 19 (Pre-Submission) Local Plan, anticipated in 2026, with submission for examination expected thereafter. The emerging Plan will set out the spatial strategy for development in the Borough up to approximately 2043.

Given its current stage of preparation, the emerging Local Plan is afforded limited weight in the decision making of this planning application. However, it remains a material consideration and provides an indication of the Council's future policy direction. Therefore, the relevant draft policies have been detailed below and have been considered where appropriate within this Energy Statement.

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

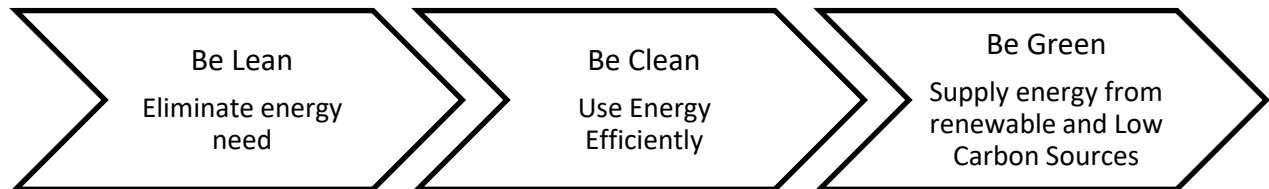
Development should be designed to meet a higher level of water efficiency. Planning permission will be granted where:

- 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 CO₂ 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, the Applicants will deliver the following objectives:

- Comply with the relevant regulatory requirements.
- To reduce energy and CO₂ demand through fabric and energy efficiency measures.
- To propose to reduce energy consumption and carbon dioxide emissions further through the use of on-site renewable or low and zero carbon technologies (LZC).

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 CO₂ 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 CO₂ performance of the residential development.

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

5.3. ESTABLISHING THE BASELINE CO₂ EMISSIONS

In order to assess the energy demand and CO₂ performance of the proposed energy strategy, a baseline needs to be established. This section sets out the approach taken to calculating the baseline CO₂ emissions for the development.

The total baseline CO₂ emissions for the proposed development is defined as regulated CO₂ emissions, which is covered by Building Regulations Part L. Regulated CO₂ emissions are calculated from the CO₂ emissions associated with space heating, hot water and fixed electrical demands (for lights, fans and pumps).

Unregulated CO₂ emissions are those that are associated with appliances. Unregulated CO₂ emissions are not covered by Part L and are therefore not included as part of the assessment detailed within this energy strategy.

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

The residential baseline CO₂ performance is based on the Part L1 2021 Target Emission Rate (TER) performance of representative dwellings. The baseline CO₂ 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 CO₂ 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 GF	3
1 BED FLAT MF	2
1 BED FLAT TF	2
2 BED FLAT GF	3
2 BED FLAT MF	5
2 BED FLAT TF	5
M2.3	4
M2.5	9
M3.11	14
M3.12	26
M3.13	7
M4.12	10
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 of the proposed development.

5.4. TOTAL BASELINE CO₂ EMISSIONS

The total baseline regulated CO₂ emissions for the development are summarised below.

Table 3: Total Baseline CO₂ emissions

Stage of Energy Hierarchy	Regulated CO ₂ Emissions (tonnes/year)
Part L 2021 Baseline	93.13

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 CO₂ emissions and increase resilience to climate change are proposed. These proposals are detailed within the following sections.

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. High performance glass will be specified 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 - Houses

Element	Part L1 2021 Minimum Fabric Requirements	Proposed Specification
Ground Floor	0.18 W/m ² K	0.12 W/m ² K
External Wall	0.26 W/m ² K	0.18 W/m ² K
Party Wall	0.20 W/m ² K	0.00 W/m ² K
Roof (cold roof)	0.16 W/m ² K	0.08 W/m ² K
Roof (sloping ceiling)	0.16 W/m ² K	0.16 W/m ² K
Windows	1.60 W/m ² K	U = 1.30 W/m ² K G = 0.44 BFRC Certificate
Patio Doors	1.60 W/m ² K	U = 1.40 W/m ² K G = 0.29 BFRC Certificate
Entrance Doors	1.60 W/m ² K	1.00 W/m ² K

Table 5: Proposed Fabric Specification - Apartments

Element	Part L1 2021 Minimum Fabric Requirements	Proposed Specification
Ground Floor	0.18 W/m ² K	0.12 W/m ² K
External Wall	0.26 W/m ² K	0.20 W/m ² K
Communal Wall	0.26 W/m ² K	0.28 W/m ² K
Party Wall	0.20 W/m ² K	0.00 W/m ² K
Roof (cold roof)	0.16 W/m ² K	0.09 W/m ² K
Windows	1.60 W/m ² K	U = 1.30 W/m ² K G = 0.44 BFRC Certificate
Patio Doors	1.60 W/m ² K	U = 1.30 W/m ² K G = 0.35 BFRC Certificate
Entrance Doors	1.60 W/m ² K	1.20 W/m ² K

6.1.4. THERMAL BRIDGING

All wall junctions will be independently assessed to minimise the effects of non-repeating thermal bridging and reduce heat loss further. By specifying and ensuring that approved construction details are designed into the build, CO₂ 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 house will be set at 4.50m³/h/m² and the apartments will be set at 4.00m³/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 CO₂ 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 CO₂ 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 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. CO₂ 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 1%. The total 'Be Lean' CO₂ emissions have been summarised below and compared against the baseline figure.

Table 6: Total 'Be Lean' CO₂ emissions

Stage of Energy Hierarchy	Regulated CO ₂ Emissions (tonnes/year)
Total Part L 2021 Baseline	93.13
Total After 'Be Lean'	92.09
Total Saving	1.04
Total Improvement	1%

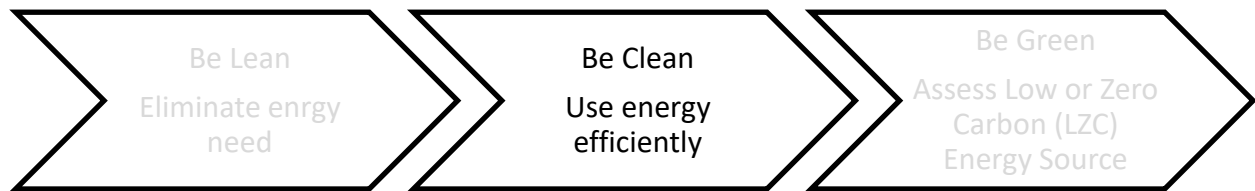
The Target Fabric Energy Efficiency rate is the minimum energy performance requirement, as stipulated by Building Regulations Part L1 2021, for all new residential dwellings. It is expressed as the amount of energy demand in units of kilowatt-hours per square metre of floor area per year. This performance 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 6%, as detailed in the table below.

Table 7: FEE Performance

Element	Target Fabric Energy Efficiency (TFEE) kWh/m ² /year	Dwelling Fabric Energy Efficiency (DFEE) kWh/m ² /year	Improvement (%)
Site Wide Average	35.33	33.27	6%

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.

There are many benefits of decentralised heat generation and Combined Heat and Power (CHP) in terms of cost and CO₂ 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 disproportionately 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.

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.

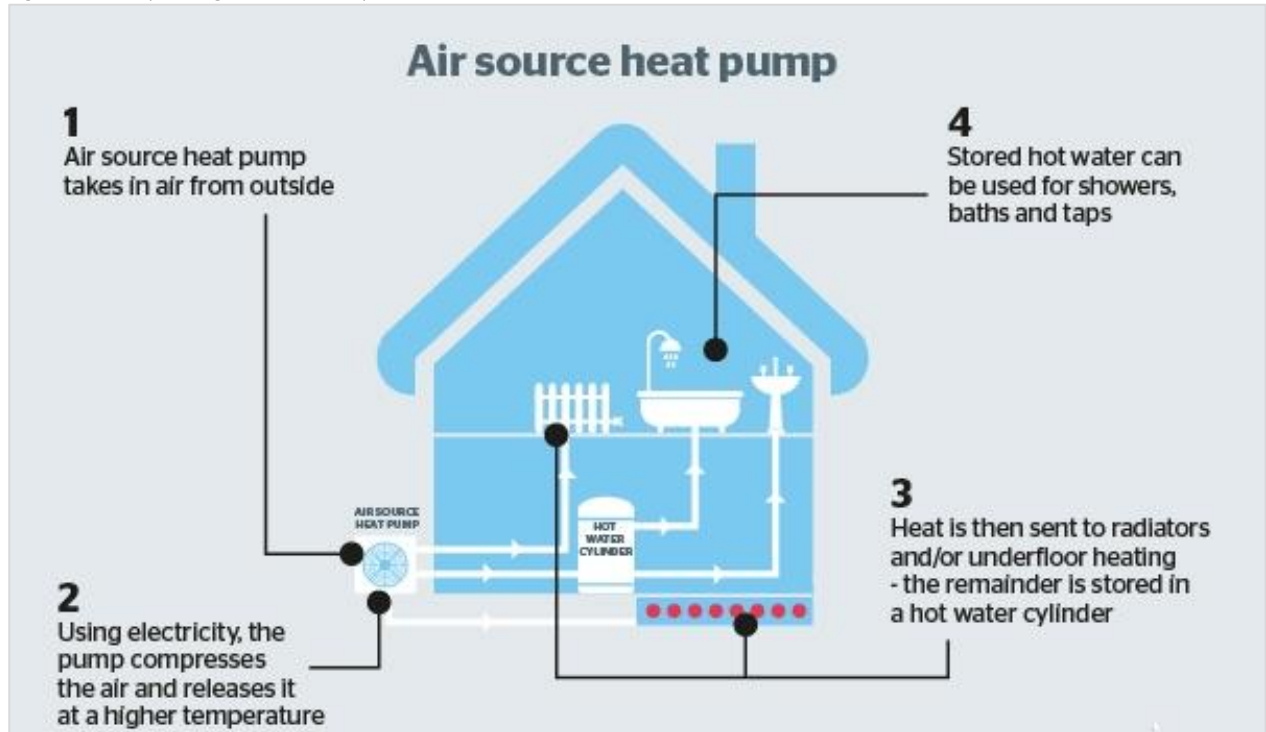
The use of individual Air Source Heat Pumps (ASHP) is proposed for this development to efficiently supply the dwellings with space heating and hot water. The ASHP are to be discreetly located within the boundary of each plot. Highly insulated hot water cylinders will be installed in conjunction with 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 8: 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 and underfloor heating
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 9: 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. CO₂ 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 67% 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 10: Total 'Be Green' CO₂ emissions

Stage of Energy Hierarchy	Regulated CO ₂ Emissions (tonnes/year)
Total Part L 2021 Baseline	93.13
Total After 'Be Lean'	92.09
Total After 'Be Green'	31.13
Total Saving	62.00
Total Improvement	67%

9. FUTURE HOMES STANDARD

The UK Government has now published the Future Homes Standard (FHS), which will represent a significant uplift to Part L of the Building Regulations and forms a key component of the transition to net zero carbon buildings. The Standard is intended to deliver highly energy-efficient homes with low-carbon heating and is expected to achieve a reduction in regulated carbon emissions of approximately 75% compared to dwellings constructed to 2013 standards.

While the Standard has now been released, the Government has confirmed that full implementation will be delayed, with transitional arrangements expected and full compliance required for new homes constructed from approximately 2028. As such, the current regulatory baseline remains the Part L 2021 uplift, which continues to apply to new residential development at the time of writing.

The Future Homes Standard introduces a move towards low-carbon heating systems (such as heat pumps), increased fabric efficiency, and the integration of renewable energy technologies including solar photovoltaic panels. Alongside this, the Government is developing the Home Energy Model (HEM), which is intended to replace the current Standard Assessment Procedure (SAP) as the methodology for assessing the energy performance of dwellings and generating Energy Performance Certificates (EPCs). However, the HEM is not yet fully implemented and SAP remains the approved compliance tool at present.

Given the anticipated programme for the proposed development, there is potential for construction to extend into the transitional period preceding full implementation of the Future Homes Standard. The detailed design and specification will therefore be subject to ongoing review to ensure compliance with the prevailing Building Regulations at the time of construction. This may necessitate updates to building fabric performance, building services, and the incorporation of low and zero carbon technologies in line with the emerging requirements of the Standard.

This Energy Strategy has been prepared using current regulatory standards and approved assessment methodologies and demonstrates compliance with Building Regulations Part L (2021) and relevant local planning policy requirements. The strategy should be reviewed at detailed design stage to ensure that the development responds appropriately to the published Future Homes Standard, evolving guidance and advances in technology.

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 11: 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 CO₂ SAVINGS

The summary of the overall reduction in regulated CO₂ emissions after each stage of the energy hierarchy is summarised in the table below.

Table 12: Energy Strategy Carbon Emissions Summary

Stage of Energy Hierarchy	Regulated CO ₂ Emissions (tonnes/year)
Total Part L 2021 Baseline	93.13
Total After 'Be Lean'	92.09
Total After 'Be Green'	31.13
Total Saving	62.00
Total Improvement	67%

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 6% reduction over the minimum standards defined by Building Regulations Part L1 2021 (TFEE).
- Low carbon energy supply systems are to be utilised in the form of heat pump technology.
- Estimated to annually reduce 62.00 tonnes of regulated CO₂ emissions compared to the Building Regulations Part L 2021 baseline.
- Achieves an overall reduction in regulated CO₂ emissions of 67% 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

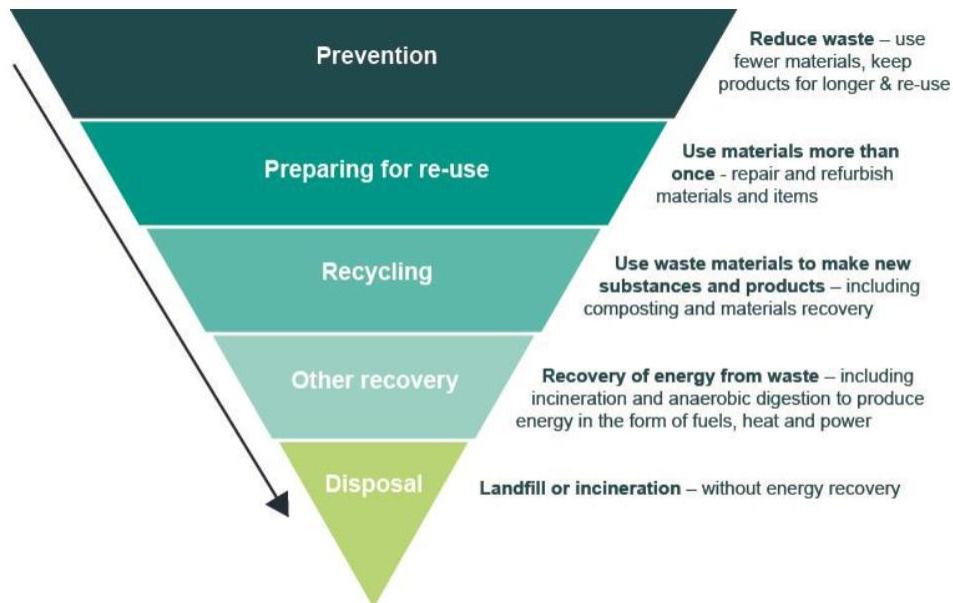


Figure 4.1: The Waste Hierarchy, Defra 2011

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 associated 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:

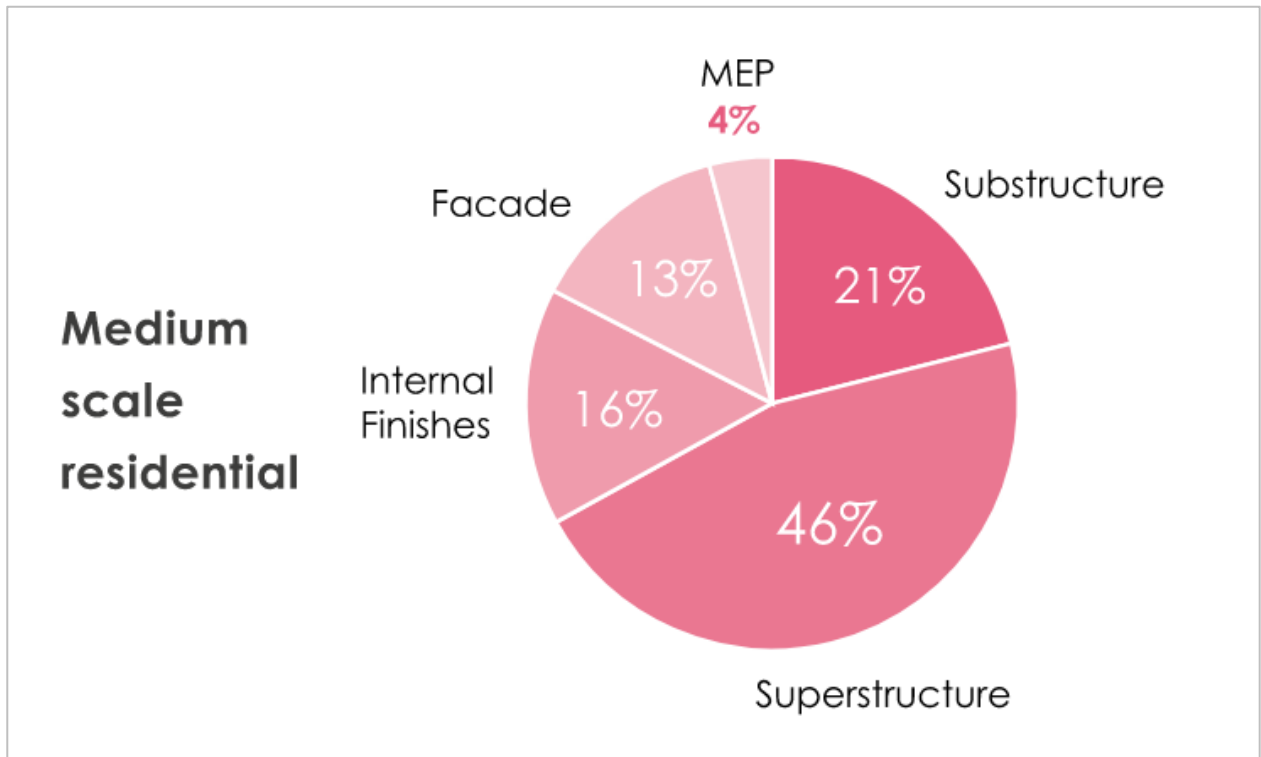
1. Build less: Refurb and re-use.
2. Build light: Consider the building structure.
3. Build wise: Longevity and local context.
4. Build low carbon: Review material specifications.

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 13: 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 14: Water Calculations

Water Calculations					
Installation Type	Unit	Capacity/ Flow Rate	Use Factor	Fixed use (l/p/day)	Total Use (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. 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. The following measures will be considered, with the final overheating mitigation strategy to be confirmed at the design stage:

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 its 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.

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.

The full Overheating Assessment, to demonstrate compliance with Part O, will be undertaken at the detailed design stage once the design and construction specifications have been fully established.

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 as 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 CO₂ emissions to satisfy building regulations, however, the efficient building fabric and use of air source heat pumps ensures compliance is met without the need for PV. 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.

12.2. APPENDIX B: VAILLANT aroTHERM PLUS TECHNICAL DATASHEET

Figure 6: 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	m³ /h	2,300			5,100	
Heating pump, power consumption	W	2 - 50			3 - 87	
Heating circuit						
Heating water temperature, minimum/maximum	° C	20 - 75				
Basic length of the heating water pipe, maximum, between the outdoor unit and indoor unit	m	20				
Operating pressure, minimum	bar	0.50				
Operating pressure, maximum	bar	3.00				
Volume flow, minimum	l/h	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	
Permissible 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 7: 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.



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	015kg	015kg
Minimum and maximum air temperatures	-7 to 35°C	-7 to 35°C
Sound power level	52 dB	52 dB
Coefficient of performance	319	314
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

Plot Reference	1 BED FLAT GF		Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	1 BED FLAT GF	
Plot Address	1 BED FLAT GF		SAP Version	10.2

SAP Rating	83 B	DER	17.57	TER	15.57
Environmental	88 B	% DER < TER			-12.85
CO ₂ Emissions (t/year)	0.8	DFEE	33.84	TFEE	37.31
Compliance Check	See BREL	% DFEE < TFEE			9.31
% DPER < TPER	-19.01	DPER	98.23	TPER	82.54

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	247.35	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:	22.01 m	50.50 m ²	2.40 m

8.0 Living Area	24.78	m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.20	110.00	42.07	33.58	0.00	None	8.49	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.28	110.00	10.75	8.63	0.50	Stairwell Access Corridor 1	2.12	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	15.63	0.00	None

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Timber Partition	Plasterboard on timber frame	9.00	91.82

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Party Ceiling 1	Precast concrete planks floor, screed, carpeted	30.00	50.50

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
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Summary for Input Data

Suspended Floor Ground Floor - Solid Lowest occupied Suspended concrete floor, carpeted 0.12 None 0.00 75.00 50.50

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			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.35			1.30
Front Solid Door	Manufacturer	Solid Door				0.00			1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	
Bottom Windows	Window	Brickwork	South	3.22	
Patio Door	Patio Door	Brickwork	North	3.89	
Top Windows	Window	Brickwork	North	1.38	

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	5.77	0.06	0.06 Keystone Lintels	No
E4 Jamb	Independently assessed	17.95	0.01	0.01	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	22.01	0.05	0.05	No
E16 Corner (normal)	Non Gov Approved Schemes	7.20	0.06	0.06 RCD	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	6.51	0.00	0.00 Table K1	No
E25 Staggered party wall between dwellings	Non Gov Approved Schemes	2.40	0.03	0.03 RCD	No
E5 Ground floor (normal)	Independently assessed	22.01	0.06	0.06	No
P1 Party wall - Ground floor	Independently assessed	6.51	0.05	0.05	No
E3 Sill	Independently assessed	2.95	0.02	0.02	No
E18 Party wall between dwellings	Non Gov Approved Schemes	2.40	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	500776
Duct Type	Rigid
Wet Rooms	2

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.14	In Room Fan Kitchen	1
0.11	In Room Fan Other Wet Room	1
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.08	Through Wall Fan Kitchen	0
0.08	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

Number of flueless gas fires

21.0 Fixed Cooling System

22.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

22.0 Lighting

No Fixed Lighting

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

Percentage of Heat %

Fuel Type

SAP Code

In Winter

In Summer

Model Name

Manufacturer

Controls SAP Code

Controls description

Delayed Start Stat

Burner Control

Flue Type

Fan Assisted Flue

Is MHS Pumped

Heating Pump Age

Heat Emitter

Flow Temperature

Flow Temperature Value

Boiler Interlock

Combi boiler type

Combi keep hot type

25.0 Main Heating 2

26.0 Heat Networks

27.0 Secondary Heating

28.0 Water Heating

Water Heating

SAP Code

Flue Gas Heat Recovery System

Waste Water Heat Recovery Instantaneous System 1

Waste Water Heat Recovery Instantaneous System 2

Waste Water Heat Recovery Storage System

Solar Panel

Water use <= 125 litres/person/day

Cold Water Source

Summary for Input Data



Bath Count

1

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

34.0 Small-scale Hydro

None

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Plot Reference	1 BED FLAT MF		Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	1 BED FLAT MF	
Plot Address	1 BED FLAT MF		SAP Version	10.2

SAP Rating	84 B	DER	16.06	TER	13.44
Environmental	89 B	% DER < TER			-19.49
CO ₂ Emissions (t/year)	0.74	DFEE	26.80	TFEE	27.51
Compliance Check	See BREL	% DFEE < TFEE			2.56
% DPER < TPER	-26.79	DPER	90.11	TPER	71.07

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	2	
2.0 Number of Storeys	1	
3.0 Date Built	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	212.35	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:	22.01 m	50.50 m ²	2.40 m

8.0 Living Area	24.78	m ²
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9.0 External Walls										
Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.20	110.00	42.07	33.58	0.00	None	8.49	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.28	110.00	10.75	8.63	0.60	Stairwell Access Corridor 2	2.12	Enter Gross Area

9.1 Party Walls							
Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	15.63	0.00	None

9.2 Internal Walls				
Description	Construction	Kappa (kJ/m ² K)	Area (m ²)	
Internal Timber Partition	Plasterboard on timber frame	9.00	91.82	

10.1 Party Ceilings				
Description	Construction	Kappa (kJ/m ² K)	Area (m ²)	
Party Ceiling 1	Precast concrete planks floor, screed, carpeted	30.00	50.50	

11.1 Party Floors				
Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)

Summary for Input Data

Party Floor 1 Lowest occupied Precast concrete planks floor, screed, carpeted 40.00 50.50

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			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.35			1.30
Front Solid Door	Manufacturer	Solid Door				0.00			1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	
Bottom Windows	Window	Brickwork	South	3.22	
Patio Door	Patio Door	Brickwork	North	3.89	
Top Windows	Window	Brickwork	North	1.38	

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	5.77	0.06	0.06	No
E4 Jamb	Independently assessed	17.95	0.01	0.01	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	44.02	0.05	0.05	No
E16 Corner (normal)	Non Gov Approved Schemes	7.20	0.06	0.06	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	13.02	0.00	0.00	No
E25 Staggered party wall between dwellings	Non Gov Approved Schemes	2.40	0.03	0.03	No
E3 Sill	Independently assessed	2.95	0.02	0.02	No
E18 Party wall between dwellings	Non Gov Approved Schemes	2.40	0.04	0.04	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	500776
Duct Type	Rigid
Wet Rooms	2

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.14	In Room Fan Kitchen	1
0.11	In Room Fan Other Wet Room	1
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.08	Through Wall Fan Kitchen	0
0.08	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

Summary for Input Data

Number of flueless gas fires

0

21.0 Fixed Cooling System

No

22.0 Pressure Testing

Yes

Designed AP₅₀

4.00

m³/(h.m²) @ 50 Pa

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

%

Fuel Type

Mains gas

SAP Code

104

In Winter

88.90

In Summer

80.30

Model Name

Gas

Manufacturer

Gas

Controls SAP Code

2110

Controls description

Time and temperature zone control by arrangement

Delayed Start Stat

Yes

Burner Control

Modulating

Flue Type

Balanced

Fan Assisted Flue

Yes

Is MHS Pumped

Pump in heated space

Heating Pump Age

2013 or later

Heat Emitter

Radiators

Flow Temperature

Enter value

Flow Temperature Value

55.00

Boiler Interlock

Yes

Combi boiler type

Standard Combi

Combi keep hot type

None

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

Cold Water Source

From mains

Bath Count

1

Summary for Input Data



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
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34.0 Small-scale Hydro				None							
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Plot Reference	1 BED FLAT TF		Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	1 BED FLAT TF	
Plot Address	1 BED FLAT TF		SAP Version	10.2

SAP Rating	83 B	DER	17.40	TER	14.91
Environmental	88 B	% DER < TER			-16.70
CO ₂ Emissions (t/year)	0.8	DFEE	32.78	TFEE	34.19
Compliance Check	See BREL	% DFEE < TFEE			4.11
% DPER < TPER	-23.19	DPER	97.28	TPER	78.97

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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

Orientation	North
Property Tenure	1
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	Flat, Mid-Terrace
Position of Flat	Top-floor flat
Which Floor	3
2.0 Number of Storeys	1
3.0 Date Built	2026
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation
Thermal Mass	191.35 kJ/m ² K
7.0 Electricity Tariff	Standard
Smart electricity meter fitted	Yes
Smart gas meter fitted	Yes

7.0 Measurements	Ground floor:	Heat Loss Perimeter 22.01 m	Internal Floor Area 50.50 m ²	Average Storey Height 2.40 m
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8.0 Living Area	24.78 m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.20	110.00	42.07	33.58	0.00	None	8.49	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.28	110.00	10.75	8.63	0.50	Stairwell Access Corridor 1	2.12	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	15.63	0.00	None

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Timber Partition	Plasterboard on timber frame	9.00	91.82

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
External Roof 1	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	50.50	50.50	None	0.00	Enter Gross Area	0.00

11.1 Party Floors

Summary for Input Data

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor 1	Lowest occupied	Precast concrete planks floor, screed, carpeted	40.00	50.50

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			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.35			1.30
Front Solid Door	Manufacturer	Solid Door				0.00			1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	
Bottom Windows	Window	Brickwork	South	3.22	
Patio Door	Patio Door	Brickwork	North	3.89	
Top Windows	Window	Brickwork	North	1.38	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	5.77	0.06	0.06 Keystone Lintels	No
E4 Jamb	Independently assessed	17.95	0.01	0.01	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	22.01	0.05	0.05	No
E16 Corner (normal)	Non Gov Approved Schemes	7.20	0.06	0.06 RCD	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	6.51	0.00	0.00 Table K1	No
E25 Staggered party wall between dwellings	Non Gov Approved Schemes	2.40	0.03	0.03 RCD	No
E3 Sill	Independently assessed	2.95	0.02	0.02	No
E18 Party wall between dwellings	Non Gov Approved Schemes	2.40	0.04	0.04 RCD	No
E10 Eaves (insulation at ceiling level)	Independently assessed	17.52	0.07	0.07	No
E12 Gable (insulation at ceiling level)	Independently assessed	4.48	0.06	0.06	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	6.51	0.07	0.07	No

Y-value W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	<input type="text" value="Yes"/>
Approved Installation	<input type="text" value="Yes"/>
Mechanical Ventilation data Type	<input type="text" value="Database"/>
Type	<input type="text" value="Mechanical extract ventilation - decentralised"/>
MV Reference Number	<input type="text" value="500776"/>
Duct Type	<input type="text" value="Rigid"/>
Wet Rooms	<input type="text" value="2"/>

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	<input type="text" value="0"/>
Number of open flues	<input type="text" value="0"/>
Number of chimneys/flues attached to closed fire	<input type="text" value="0"/>
Number of flues attached to solid fuel boiler	<input type="text" value="0"/>
Number of flues attached to other heater	<input type="text" value="0"/>

Summary for Input Data

Number of blocked chimneys	<input type="text" value="0"/>
Number of intermittent extract fans	<input type="text" value="0"/>
Number of passive vents	<input type="text" value="0"/>
Number of flueless gas fires	<input type="text" value="0"/>

21.0 Fixed Cooling System	<input type="text" value="No"/>
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22.0 Pressure Testing	<input type="text" value="Yes"/>	
Designed AP ₅₀	<input type="text" value="4.00"/>	m ³ /(h.m ²) @ 50 Pa
Test Method	<input type="text" value="Blower Door"/>	

22.0 Lighting	<input type="text" value="No"/>				
No Fixed Lighting	<input type="text" value="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	<input type="text" value="Manufacturer"/>	
Percentage of Heat	<input type="text" value="100.00"/>	%
Fuel Type	<input type="text" value="Mains gas"/>	
SAP Code	<input type="text" value="104"/>	
In Winter	<input type="text" value="88.90"/>	
In Summer	<input type="text" value="80.30"/>	
Model Name	<input type="text" value="Gas"/>	
Manufacturer	<input type="text" value="Gas"/>	
Controls SAP Code	<input type="text" value="2110"/>	
Controls description	<input type="text" value="Time and temperature zone control by arrangement"/>	
Delayed Start Stat	<input type="text" value="Yes"/>	
Burner Control	<input type="text" value="Modulating"/>	
Flue Type	<input type="text" value="Balanced"/>	
Fan Assisted Flue	<input type="text" value="Yes"/>	
Is MHS Pumped	<input type="text" value="Pump in heated space"/>	
Heating Pump Age	<input type="text" value="2013 or later"/>	
Heat Emitter	<input type="text" value="Radiators"/>	
Flow Temperature	<input type="text" value="Enter value"/>	
Flow Temperature Value	<input type="text" value="55.00"/>	
Boiler Interlock	<input type="text" value="Yes"/>	
Combi boiler type	<input type="text" value="Standard Combi"/>	
Combi keep hot type	<input type="text" value="None"/>	

25.0 Main Heating 2	<input type="text" value="None"/>
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26.0 Heat Networks	<input type="text" value="None"/>
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27.0 Secondary Heating	<input type="text" value="None"/>
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28.0 Water Heating	
Water Heating	<input type="text" value="Main Heating 1"/>
SAP Code	<input type="text" value="901"/>
Flue Gas Heat Recovery System	<input type="text" value="No"/>
Waste Water Heat Recovery Instantaneous System 1	<input type="text" value="No"/>
Waste Water Heat Recovery Instantaneous System 2	<input type="text" value="No"/>
Waste Water Heat Recovery Storage System	<input type="text" value="No"/>
Solar Panel	<input type="text" value="No"/>

Summary for Input Data

Water use <= 125 litres/person/day

Cold Water Source

Bath Count

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

34.0 Small-scale Hydro

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

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Plot Reference	2 BED FLAT GF		Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	2 BED FLAT GF	
Plot Address	2 BED FLAT GF		SAP Version	10.2

SAP Rating	85 B	DER	14.24	TER	12.35
Environmental	89 B	% DER < TER			-15.30
CO ₂ Emissions (t/year)	0.91	DFEE	27.74	TFEE	30.67
Compliance Check	See BREL	% DFEE < TFEE			9.54
% DPER < TPER	-22.87	DPER	79.95	TPER	65.07

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	234.13	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:	22.18 m	70.63 m ²	2.40 m

8.0 Living Area	28.43	m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.20	110.00	41.68	33.19	0.00	None	8.49	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.28	110.00	11.54	9.42	0.50	Stairwell Access Corridor 1	2.12	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	30.20	0.00	None

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Timber Partition	Plasterboard on timber frame	9.00	123.50

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Party Ceiling 1	Precast concrete planks floor, screed, carpeted	30.00	70.63

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
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Summary for Input Data

Suspended Floor Ground Floor - Solid Lowest occupied Suspended concrete floor, carpeted 0.12 None 0.00 75.00 70.63

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			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.35			1.30
Front Solid Door	Manufacturer	Solid Door				0.00			1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	
Bottom Windows	Window	Brickwork	South	3.22	
Patio Door	Patio Door	Brickwork	East	3.89	
Top Windows	Window	Brickwork	East	1.38	

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	5.77	0.06	0.06 Keystone Lintels	No
E4 Jamb	Independently assessed	17.95	0.01	0.01	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	22.18	0.05	0.05	No
E16 Corner (normal)	Non Gov Approved Schemes	2.40	0.06	0.06 RCD	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	12.58	0.00	0.00 Table K1	No
E25 Staggered party wall between dwellings	Non Gov Approved Schemes	4.80	0.03	0.03 RCD	No
E5 Ground floor (normal)	Independently assessed	22.18	0.06	0.06	No
P1 Party wall - Ground floor	Independently assessed	12.58	0.05	0.05	No
E3 Sill	Independently assessed	2.95	0.02	0.02	No
E18 Party wall between dwellings	Non Gov Approved Schemes	4.80	0.04	0.04 RCD	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	500776
Duct Type	Rigid
Wet Rooms	2

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.14	In Room Fan Kitchen	1
0.11	In Room Fan Other Wet Room	1
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.08	Through Wall Fan Kitchen	0
0.08	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

Number of flueless gas fires

21.0 Fixed Cooling System

22.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

22.0 Lighting

No Fixed Lighting

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

Percentage of Heat %

Fuel Type

SAP Code

In Winter

In Summer

Model Name

Manufacturer

Controls SAP Code

Controls description

Delayed Start Stat

Burner Control

Flue Type

Fan Assisted Flue

Is MHS Pumped

Heating Pump Age

Heat Emitter

Flow Temperature

Flow Temperature Value

Boiler Interlock

Combi boiler type

Combi keep hot type

25.0 Main Heating 2

26.0 Heat Networks

27.0 Secondary Heating

28.0 Water Heating

Water Heating

SAP Code

Flue Gas Heat Recovery System

Waste Water Heat Recovery Instantaneous System 1

Waste Water Heat Recovery Instantaneous System 2

Waste Water Heat Recovery Storage System

Solar Panel

Water use <= 125 litres/person/day

Cold Water Source

Summary for Input Data



Bath Count

1

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

34.0 Small-scale Hydro

None

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Plot Reference	2 BED FLAT MF		Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	2 BED FLAT MF	
Plot Address	2 BED FLAT MF		SAP Version	10.2

SAP Rating	85 B	DER	12.77	TER	10.35
Environmental	90 B	% DER < TER			-23.38
CO ₂ Emissions (t/year)	0.83	DFEE	20.86	TFEE	21.50
Compliance Check	See BREL	% DFEE < TFEE			3.01
% DPER < TPER	-32.69	DPER	72.08	TPER	54.32

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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

Orientation	North
Property Tenure	1
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	Flat, Mid-Terrace
Position of Flat	Mid-floor flat
Which Floor	2
2.0 Number of Storeys	1
3.0 Date Built	2026
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation
Thermal Mass	199.13 kJ/m ² K
7.0 Electricity Tariff	Standard
Smart electricity meter fitted	Yes
Smart gas meter fitted	Yes

7.0 Measurements	Ground floor:	Heat Loss Perimeter 22.18 m	Internal Floor Area 70.63 m ²	Average Storey Height 2.40 m
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8.0 Living Area	28.43 m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.20	110.00	41.68	33.19	0.00	None	8.49	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.28	110.00	11.54	9.42	0.60	Stairwell Access Corridor 2	2.12	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	30.20	0.00	None

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Timber Partition	Plasterboard on timber frame	9.00	123.50

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Party Ceiling 1	Precast concrete planks floor, screed, carpeted	30.00	70.63

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
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Summary for Input Data

Party Floor 1 Lowest occupied Precast concrete planks floor, screed, carpeted 40.00 70.63

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			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.35			1.30
Front Solid Door	Manufacturer	Solid Door				0.00			1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	
Bottom Windows	Window	Brickwork	South	3.22	
Patio Door	Patio Door	Brickwork	East	3.89	
Top Windows	Window	Brickwork	East	1.38	

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	5.77	0.06	0.06	No
E4 Jamb	Independently assessed	17.95	0.01	0.01	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	44.36	0.05	0.05	No
E16 Corner (normal)	Non Gov Approved Schemes	2.40	0.06	0.06	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	25.16	0.00	0.00	No
E25 Staggered party wall between dwellings	Non Gov Approved Schemes	4.80	0.03	0.03	No
E3 Sill	Independently assessed	2.95	0.02	0.02	No
E18 Party wall between dwellings	Non Gov Approved Schemes	4.80	0.04	0.04	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	500776
Duct Type	Rigid
Wet Rooms	2

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.14	In Room Fan Kitchen	1
0.11	In Room Fan Other Wet Room	1
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.08	Through Wall Fan Kitchen	0
0.08	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

Summary for Input Data

Number of flueless gas fires

0

21.0 Fixed Cooling System

No

22.0 Pressure Testing

Yes

Designed AP₅₀

4.00

m³/(h.m²) @ 50 Pa

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

%

Fuel Type

Mains gas

SAP Code

104

In Winter

88.90

In Summer

80.30

Model Name

Gas

Manufacturer

Gas

Controls SAP Code

2110

Controls description

Time and temperature zone control by arrangement

Delayed Start Stat

Yes

Burner Control

Modulating

Flue Type

Balanced

Fan Assisted Flue

Yes

Is MHS Pumped

Pump in heated space

Heating Pump Age

2013 or later

Heat Emitter

Radiators

Flow Temperature

Enter value

Flow Temperature Value

55.00

Boiler Interlock

Yes

Combi boiler type

Standard Combi

Combi keep hot type

None

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

Cold Water Source

From mains

Bath Count

1

Summary for Input Data



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
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34.0 Small-scale Hydro				None							
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Plot Reference	2 BED FLAT TF		Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	2 BED FLAT TF	
Plot Address	2 BED FLAT TF		SAP Version	10.2

SAP Rating	85 B	DER	14.28	TER	12.05
Environmental	89 B	% DER < TER			-18.51
CO ₂ Emissions (t/year)	0.92	DFEE	27.73	TFEE	29.28
Compliance Check	See BREL	% DFEE < TFEE			5.29
% DPER < TPER	-26.31	DPER	80.19	TPER	63.49

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	Top-floor flat	
Which Floor	3	
2.0 Number of Storeys	1	
3.0 Date Built	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	178.13	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements	Ground floor:	Heat Loss Perimeter 22.18 m	Internal Floor Area 70.63 m ²	Average Storey Height 2.40 m
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8.0 Living Area	28.43	m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.20	110.00	41.68	33.19	0.00	None	8.49	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.28	110.00	11.54	9.42	0.50	Stairwell Access Corridor 1	2.12	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	30.20	0.00	None

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Timber Partition	Plasterboard on timber frame	9.00	123.50

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	70.63	70.63	None	0.00	Enter Gross Area	0.00

11.1 Party Floors

Summary for Input Data

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor 1	Lowest occupied	Precast concrete planks floor, screed, carpeted	40.00	70.63

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			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.35			1.30
Front Solid Door	Manufacturer	Solid Door				0.00			1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	
Bottom Windows	Window	Brickwork	South	3.22	
Patio Door	Patio Door	Brickwork	East	3.89	
Top Windows	Window	Brickwork	East	1.38	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted	Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	5.77	0.06	0.06	Keystone Lintels	No
E4 Jamb	Independently assessed	17.95	0.01	0.01		No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	22.18	0.05	0.05		No
E16 Corner (normal)	Non Gov Approved Schemes	2.40	0.06	0.06	RCD	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	12.58	0.00	0.00	Table K1	No
E25 Staggered party wall between dwellings	Non Gov Approved Schemes	4.80	0.03	0.03	RCD	No
E3 Sill	Independently assessed	2.95	0.02	0.02		No
E18 Party wall between dwellings	Non Gov Approved Schemes	4.80	0.04	0.04	RCD	No
E10 Eaves (insulation at ceiling level)	Independently assessed	34.73	0.07	0.07		No
E12 Gable (insulation at ceiling level)	Independently assessed	4.81	0.06	0.06		No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	12.58	0.07	0.07		No

Y-value W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	<input type="text" value="Yes"/>
Approved Installation	<input type="text" value="Yes"/>
Mechanical Ventilation data Type	<input type="text" value="Database"/>
Type	<input type="text" value="Mechanical extract ventilation - decentralised"/>
MV Reference Number	<input type="text" value="500776"/>
Duct Type	<input type="text" value="Rigid"/>
Wet Rooms	<input type="text" value="2"/>

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	<input type="text" value="0"/>
Number of open flues	<input type="text" value="0"/>
Number of chimneys/flues attached to closed fire	<input type="text" value="0"/>
Number of flues attached to solid fuel boiler	<input type="text" value="0"/>
Number of flues attached to other heater	<input type="text" value="0"/>

Summary for Input Data

Number of blocked chimneys	<input type="text" value="0"/>
Number of intermittent extract fans	<input type="text" value="0"/>
Number of passive vents	<input type="text" value="0"/>
Number of flueless gas fires	<input type="text" value="0"/>

21.0 Fixed Cooling System	<input type="text" value="No"/>
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22.0 Pressure Testing	<input type="text" value="Yes"/>	
Designed AP ₅₀	<input type="text" value="4.00"/>	m ³ /(h.m ²) @ 50 Pa
Test Method	<input type="text" value="Blower Door"/>	

22.0 Lighting	<input type="text" value="No"/>				
No Fixed Lighting	<input type="text" value="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	<input type="text" value="Manufacturer"/>	
Percentage of Heat	<input type="text" value="100.00"/>	%
Fuel Type	<input type="text" value="Mains gas"/>	
SAP Code	<input type="text" value="104"/>	
In Winter	<input type="text" value="88.90"/>	
In Summer	<input type="text" value="80.30"/>	
Model Name	<input type="text" value="Gas"/>	
Manufacturer	<input type="text" value="Gas"/>	
Controls SAP Code	<input type="text" value="2110"/>	
Controls description	<input type="text" value="Time and temperature zone control by arrangement"/>	
Delayed Start Stat	<input type="text" value="Yes"/>	
Burner Control	<input type="text" value="Modulating"/>	
Flue Type	<input type="text" value="Balanced"/>	
Fan Assisted Flue	<input type="text" value="Yes"/>	
Is MHS Pumped	<input type="text" value="Pump in heated space"/>	
Heating Pump Age	<input type="text" value="2013 or later"/>	
Heat Emitter	<input type="text" value="Radiators"/>	
Flow Temperature	<input type="text" value="Enter value"/>	
Flow Temperature Value	<input type="text" value="55.00"/>	
Boiler Interlock	<input type="text" value="Yes"/>	
Combi boiler type	<input type="text" value="Standard Combi"/>	
Combi keep hot type	<input type="text" value="None"/>	

25.0 Main Heating 2	<input type="text" value="None"/>
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26.0 Heat Networks	<input type="text" value="None"/>
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27.0 Secondary Heating	<input type="text" value="None"/>
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28.0 Water Heating	
Water Heating	<input type="text" value="Main Heating 1"/>
SAP Code	<input type="text" value="901"/>
Flue Gas Heat Recovery System	<input type="text" value="No"/>
Waste Water Heat Recovery Instantaneous System 1	<input type="text" value="No"/>
Waste Water Heat Recovery Instantaneous System 2	<input type="text" value="No"/>
Waste Water Heat Recovery Storage System	<input type="text" value="No"/>
Solar Panel	<input type="text" value="No"/>

Summary for Input Data

Water use <= 125 litres/person/day

Cold Water Source

Bath Count

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

34.0 Small-scale Hydro

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

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data



Plot Reference	M2.3	Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	M2.3
Plot Address	M2.3	SAP Version	10.2

SAP Rating	84 B	DER	14.82	TER	11.78
Environmental	88 B	% DER < TER			-25.81
CO ₂ Emissions (t/year)	1.07	DFEE	33.77	TFEE	36.19
Compliance Check	See BREL	% DFEE < TFEE			6.68
% DPER < TPER	-34.69	DPER	82.89	TPER	61.54

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	
2.0 Number of Storeys	2	
3.0 Date Built	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	189.74	kJ/m²K
<hr/>		
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements	Ground floor:	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	1st Storey:	18.00 m	40.15 m ²	2.46 m
		18.00 m	40.15 m ²	2.76 m

8.0 Living Area	34.42	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	93.96	78.74	0.00	None	15.22	Calculate Wall Area

9.1 Party Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
	Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	42.96	0.00	None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Metal GF	Plasterboard on timber frame	9.00	52.49
	Metal FF	Plasterboard on timber frame	9.00	95.26

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
	Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	40.15	40.15	None	0.00	Calculate Wall Area	0.00

10.2 Internal Ceilings	Description	Storey	Construction	Kappa	Area (m ²)
	Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	9.00	40.15

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	40.15

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1	+1	Plasterboard ceiling, carpeted chipboard floor	18.00	40.15

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	1.00
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.29			1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door	Brickwork	North	2.14	
D02	Patio Door	Brickwork	South	5.23	
W01	Window	Brickwork	North	1.08	
W02 (ground floor)	Window	Brickwork	South	0.83	
W03	Window	Brickwork	North	1.54	
W04	Window	Brickwork	South	1.63	
W05	Window	Brickwork	South	1.22	
W06	Window	Brickwork	East	0.83	
W02 (first floor)	Window	Brickwork	North	0.71	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E10 Eaves (insulation at ceiling level)	Independently assessed	9.75	0.07	0.07	No
E12 Gable (insulation at ceiling level)	Independently assessed	8.23	0.05	0.05	No
E1 Steel lintel with perforated steel base plate	Independently assessed	10.01	0.07	0.07	No
E3 Sill	Independently assessed	6.50	0.02	0.02	No
E4 Jamb	Independently assessed	25.20	0.01	0.01	No
E5 Ground floor (normal)	Independently assessed	18.00	0.06	0.06	No
E6 Intermediate floor within a dwelling	Independently assessed	18.00	0.00	0.00	No
E16 Corner (normal)	Independently assessed	10.44	0.04	0.04	Yes
E18 Party wall between dwellings	Independently assessed	10.44	0.04	0.04	Yes
P1 Party wall - Ground floor	Independently assessed	8.23	0.07	0.07	No
P2 Party wall - Intermediate floor within a dwelling	Independently assessed	8.23	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	8.23	0.07	0.07	No

Y-value W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

Approved Installation

Mechanical Ventilation data Type

Type

MV Reference Number

Duct Type

Wet Rooms

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.15	In Room Fan	1
	Kitchen	
0.15	In Room Fan Other	3
	Wet Room	
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other	0
	Wet Room	
0.11	Through Wall Fan	0
	Kitchen	
0.14	Through Wall Fan	0
	Other Wet Room	

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
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22.0 Pressure Testing	Yes	
Designed AP ₅₀	4.50	m³/(h.m²) @ 50 Pa
Test Method	Blower Door	

22.0 Lighting	No
No Fixed Lighting	No

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	6
Downlight	75.00	10.00	750.00	16

24.0 Main Heating 1	Manufacturer
Percentage of Heat	100.00 %
Fuel Type	Mains gas
SAP Code	104
In Winter	88.90
In Summer	80.30
Model Name	Gas
Manufacturer	Gas
Controls SAP Code	2110
Controls description	Time and temperature zone control by arrangement
Delayed Start Stat	Yes
Burner Control	Modulating
Flue Type	Balanced
Fan Assisted Flue	Yes
Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators
Flow Temperature	Enter value
Flow Temperature Value	55.00
Boiler Interlock	Yes
Combi boiler type	Standard Combi
Combi keep hot type	None

25.0 Main Heating 2	None
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26.0 Heat Networks	None
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27.0 Secondary Heating	None
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28.0 Water Heating	Main Heating 1
SAP Code	901
Flue Gas Heat Recovery System	No

Summary for Input Data

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

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
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34.0 Small-scale Hydro

None											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Plot Reference	M2.5	Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	M2.5
Plot Address	M2.5	SAP Version	10.2

SAP Rating	84 B	DER	14.94	TER	11.93
Environmental	88 B	% DER < TER			-25.23
CO ₂ Emissions (t/year)	1.07	DFEE	33.74	TFEE	36.19
Compliance Check	See BREL	% DFEE < TFEE			6.77
% DPER < TPER	-33.99	DPER	83.69	TPER	62.46

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	
2.0 Number of Storeys	2	
3.0 Date Built	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	195.14	kJ/m²K
<hr/>		
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements	Ground floor:	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	1st Storey:	17.88 m	39.63 m ²	2.46 m
		17.88 m	39.63 m ²	2.76 m

8.0 Living Area	33.09	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	93.33	81.24	0.00	None	12.09	Calculate Wall Area

9.1 Party Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
	Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	45.93	0.00	None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Metal GF	Plasterboard on timber frame	9.00	59.83
	Metal FF	Plasterboard on timber frame	9.00	66.88

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
	Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	39.63	39.63	None	0.00	Calculate Wall Area	0.00

10.2 Internal Ceilings	Description	Storey	Construction	Kappa	Area (m ²)
	Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	9.00	39.63

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	39.63

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1	+1	Plasterboard ceiling, carpeted chipboard floor	18.00	39.63

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 Window	Manufacturer BFR, BSI or CERTASS data	Half Glazed Door Window	Double Low-E Soft 0.1			0.63		0.70	1.20
			Double Low-E Soft 0.1			0.44			1.30
Patio Door	BFR, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.29			1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door Side Panel	Brickwork	North	2.15	
D02	Patio Door	Brickwork	South	3.80	
W01	Window	Brickwork	North	1.07	
W02	Window	Brickwork	North	2.17	
W03	Window	Brickwork	South	2.17	
W04	Window	Brickwork	East	0.72	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E10 Eaves (insulation at ceiling level)	Independently assessed	9.06	0.07	0.07	No
E12 Gable (insulation at ceiling level)	Independently assessed	8.82	0.05	0.05	No
E1 Steel lintel with perforated steel base plate	Independently assessed	8.16	0.07	0.07	No
E3 Sill	Independently assessed	5.33	0.02	0.02	No
E4 Jamb	Independently assessed	17.40	0.01	0.01	No
E5 Ground floor (normal)	Independently assessed	17.88	0.06	0.06	No
E6 Intermediate floor within a dwelling	Independently assessed	17.88	0.00	0.00	No
E16 Corner (normal)	Independently assessed	10.44	0.04	0.04	Yes
E18 Party wall between dwellings	Independently assessed	10.44	0.04	0.04	Yes
P1 Party wall - Ground floor	Independently assessed	8.82	0.07	0.07	No
P2 Party wall - Intermediate floor within a dwelling	Independently assessed	8.82	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	8.82	0.07	0.07	No

Y-value W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	<input type="text" value="Yes"/>
Approved Installation	<input type="text" value="Yes"/>
Mechanical Ventilation data Type	<input type="text" value="Database"/>
Type	<input type="text" value="Mechanical extract ventilation - decentralised"/>
MV Reference Number	<input type="text" value="500755"/>
Duct Type	<input type="text" value="Rigid"/>
Wet Rooms	<input type="text" value="3"/>

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	<input type="text" value="0"/>
Number of open flues	<input type="text" value="0"/>

Summary for Input Data

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

22.0 Pressure Testing

Designed AP₅₀ m²/(h.m²) @ 50 Pa

Test Method

22.0 Lighting

No Fixed Lighting

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	6
Downlight	75.00	10.00	750.00	9

24.0 Main Heating 1

Percentage of Heat %

Fuel Type

SAP Code

In Winter

In Summer

Model Name

Manufacturer

Controls SAP Code

Controls description

Delayed Start Stat

Burner Control

Flue Type

Fan Assisted Flue

Is MHS Pumped

Heating Pump Age

Heat Emitter

Flow Temperature

Flow Temperature Value

Boiler Interlock

Combi boiler type

Combi keep hot type

25.0 Main Heating 2

26.0 Heat Networks

27.0 Secondary Heating

28.0 Water Heating

Water Heating

SAP Code

Flue Gas Heat Recovery System

Waste Water Heat Recovery Instantaneous System 1

Waste Water Heat Recovery Instantaneous System 2

Summary for Input Data

Waste Water Heat Recovery Storage System	<input type="text" value="No"/>
Solar Panel	<input type="text" value="No"/>
Water use <= 125 litres/person/day	<input type="text" value="Yes"/>
Cold Water Source	<input type="text" value="From mains"/>
Bath Count	<input type="text" value="1"/>

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	<input type="text" value="None"/>
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34.0 Small-scale Hydro	<input type="text" value="None"/>
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Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data



Plot Reference	M3.11	Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	M3.11
Plot Address	M3.11	SAP Version	10.2

SAP Rating	85 B	DER	13.43	TER	10.40
Environmental	88 B	% DER < TER			-29.13
CO ₂ Emissions (t/year)	1.17	DFEE	31.71	TFEE	33.91
Compliance Check	See BREL	% DFEE < TFEE			6.50
% DPER < TPER	-38.24	DPER	75.10	TPER	54.33

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	
2.0 Number of Storeys	2	
3.0 Date Built	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	184.00	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements	Ground floor:	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	1st Storey:	19.72 m	48.48 m ²	2.46 m
		19.72 m	48.48 m ²	2.76 m

8.0 Living Area	27.56	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	102.94	89.76	0.00	None	13.18	Calculate Wall Area

9.1 Party Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
	Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	48.86	0.00	None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Metal GF	Plasterboard on timber frame	9.00	85.09
	Metal FF	Plasterboard on timber frame	9.00	103.64

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
	Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	48.48	48.48	None	0.00	Calculate Wall Area	0.00

10.2 Internal Ceilings	Description	Storey	Construction	Kappa	Area (m ²)
	Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	9.00	48.48

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	48.48

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1	+1	Plasterboard ceiling, carpeted chipboard floor	18.00	48.48

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				0.63			1.00
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.29			1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door	Brickwork	North	2.16	
D02	Patio Door	Brickwork	South	5.23	
W01	Window	Brickwork	North	1.07	
W02	Window	Brickwork	North	0.72	
W03	Window	Brickwork	North	1.54	
W04	Window	Brickwork	South	1.22	
W05	Window	Brickwork	South	1.22	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E10 Eaves (insulation at ceiling level)	Independently assessed	10.36	0.07	0.07	No
E12 Gable (insulation at ceiling level)	Independently assessed	9.36	0.05	0.05	No
E1 Steel lintel with perforated steel base plate	Independently assessed	8.30	0.07	0.07	No
E3 Sill	Independently assessed	4.78	0.02	0.02	No
E4 Jamb	Independently assessed	20.40	0.01	0.01	No
E5 Ground floor (normal)	Independently assessed	19.72	0.06	0.06	No
E6 Intermediate floor within a dwelling	Independently assessed	19.72	0.00	0.00	No
E16 Corner (normal)	Independently assessed	10.44	0.04	0.04	No
E18 Party wall between dwellings	Independently assessed	10.44	0.04	0.04	No
P1 Party wall - Ground floor	Independently assessed	9.36	0.07	0.07	No
P2 Party wall - Intermediate floor within a dwelling	Independently assessed	9.36	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	9.36	0.07	0.07	No

Y-value W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	<input type="text" value="Yes"/>
Approved Installation	<input type="text" value="No"/>
Mechanical Ventilation data Type	<input type="text" value="Database"/>
Type	<input type="text" value="Mechanical extract ventilation - decentralised"/>
MV Reference Number	<input type="text" value="500755"/>
Duct Type	<input type="text" value="Rigid"/>
Wet Rooms	<input type="text" value="3"/>

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	<input type="text" value="0"/>
Number of open flues	<input type="text" value="0"/>

Summary for Input Data

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

22.0 Pressure Testing

Designed AP₅₀ m²/(h.m²) @ 50 Pa

Test Method

22.0 Lighting

No Fixed Lighting	<input type="text" value="No"/>				
	Name	Efficacy	Power	Capacity	Count
	Pendant	75.00	10.00	750.00	11
	Downlight	75.00	10.00	750.00	11

24.0 Main Heating 1

Percentage of Heat %

Fuel Type

SAP Code

In Winter

In Summer

Model Name

Manufacturer

Controls SAP Code

Controls description

Delayed Start Stat

Burner Control

Flue Type

Fan Assisted Flue

Is MHS Pumped

Heating Pump Age

Heat Emitter

Flow Temperature

Flow Temperature Value

Boiler Interlock

Combi boiler type

Combi keep hot type

25.0 Main Heating 2

26.0 Heat Networks

27.0 Secondary Heating

28.0 Water Heating

Water Heating

SAP Code

Flue Gas Heat Recovery System

Waste Water Heat Recovery Instantaneous System 1

Waste Water Heat Recovery Instantaneous System 2

Summary for Input Data

Waste Water Heat Recovery Storage System	<input type="text" value="No"/>
Solar Panel	<input type="text" value="No"/>
Water use <= 125 litres/person/day	<input type="text" value="Yes"/>
Cold Water Source	<input type="text" value="From mains"/>
Bath Count	<input type="text" value="1"/>

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	<input type="text" value="None"/>
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34.0 Small-scale Hydro	<input type="text" value="None"/>
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Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Plot Reference	M3.12	Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	M3.12
Plot Address	M3.12	SAP Version	10.2

SAP Rating	85 B	DER	13.64	TER	11.43
Environmental	88 B	% DER < TER			-19.34
CO ₂ Emissions (t/year)	1.21	DFEE	34.68	TFEE	36.41
Compliance Check	See BREL	% DFEE < TFEE			4.76
% DPER < TPER	-27.53	DPER	76.29	TPER	59.82

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	
2.0 Number of Storeys	3	
3.0 Date Built	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	216.31	kJ/m²K
<hr/>		
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements	Ground floor:	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	1st Storey:	17.34 m	37.58 m²	2.46 m
	2nd Storey:	17.34 m	37.58 m²	2.76 m
		15.97 m	25.20 m²	2.40 m

8.0 Living Area	17.57	m²
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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	107.84	92.28	0.00	None	15.56	Enter Gross Area
	Timber Stud Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.18	9.00	15.42	15.42	0.00	None	0.00	Enter Gross Area
	Dormer Cheek	Timber Frame	Timber framed wall (one layer of plasterboard)	0.26	9.00	3.91	2.28	0.00	None	1.63	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	59.76	0.00	None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m²K)	Area (m²)
	Metal GF	Plasterboard on timber frame	9.00	18.41
	Metal FF	Plasterboard on timber frame	9.00	88.43
	Metal SF	Plasterboard on timber frame	9.00	18.32
	Block Wall GF	Dense block, plasterboard on dabs	75.00	45.94

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	16.94	16.94	None	0.00	Enter Gross Area	0.00
	Dormer Roof	External Flat Roof	Plasterboard, insulated flat roof	0.19	9.00	1.92	1.92	None	0.00	Enter Gross Area	0.00

Summary for Input Data



Exposed Roof	External Plane	Plasterboard, insulated at ceiling level	0.12	9.00	12.38	12.38	None	0.00	Enter Gross Area	0.00
Sloping Roof	External Slope	Plasterboard, insulated slope	0.16	9.00	8.97	8.02	None	0.00	Enter Gross Area	0.95

10.2 Internal Ceilings

Description	Storey	Construction	Kappa	Area (m²)
Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	9.00	37.58
Internal Ceiling 2	+2	Plasterboard ceiling, carpeted chipboard floor	9.00	25.20

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	37.58

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1	+1	Plasterboard ceiling, carpeted chipboard floor	18.00	37.58
Internal Floor 2	+2	Plasterboard ceiling, carpeted chipboard floor	18.00	25.20

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	1.00
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.29			1.40
Roof Window	BFRC, BSI or CERTASS data	Roof Window	Double Low-E Soft 0.1			0.63			1.30
Storage Door	Manufacturer	Solid Door				0.00			2.00

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door	Brickwork	North	2.14	
D02	Patio Door	Brickwork	South	5.22	
W01,4,5	Window	Brickwork	North	4.14	
W08	Window	Dormer Cheek	North	1.63	
W06	Window	Brickwork	South	1.90	
W09	Roof Window	Sloping Roof	South	0.95	45
W02,3,7	Window	Brickwork	East	2.16	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E12 Gable (insulation at ceiling level)	Independently assessed	6.95	0.05	0.05	No
E1 Steel lintel with perforated steel base plate	Independently assessed	10.21	0.07	0.07	No
E3 Sill	Independently assessed	7.72	0.02	0.02	No
E4 Jamb	Independently assessed	25.20	0.01	0.01	No
E5 Ground floor (normal)	Independently assessed	17.34	0.06	0.06	No
E6 Intermediate floor within a dwelling	Independently assessed	33.31	0.00	0.00	No
E16 Corner (normal)	Independently assessed	14.26	0.04	0.04	No
E17 Corner (inverted – internal area greater than external area)	Table K1 - Default	0.00	0.00	-0.05	No
E17 Corner (inverted – internal area greater than external area)	Table K1 - Default	3.30	0.00	0.00	No
E16 Corner (normal)	Independently assessed	4.41	0.04	0.04	No
R9 Roof to wall (flat ceiling)	Independently assessed	4.18	0.06	0.06	No
R7 Flat ceiling (inverted)	Independently assessed	6.71	0.03	0.03	No
R6 Flat ceiling	Independently assessed	8.77	0.02	0.02	No
R8 Roof to wall (rafter)	Independently assessed	8.77	0.05	0.05	No
R1 Head of roof window	Independently assessed	1.36	0.12	0.12	No
R2 Sill of roof window	Independently assessed	1.36	0.11	0.11	No
R3 Jamb of roof window	Independently assessed	2.40	0.04	0.04	No
E13 Gable (insulation at rafter level)	Independently assessed	6.67	0.09	0.09	No
E11 Eaves (insulation at rafter level)	Independently assessed	8.77	0.04	0.04	No
P1 Party wall - Ground floor	Independently assessed	8.57	0.07	0.07	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	14.05	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	3.86	0.07	0.07	No
P5 Party wall - Roof (insulation at rafter level)	Independently assessed	6.70	0.04	0.04	No
R1 Head of roof window	Independently assessed	0.77	0.12	0.12	No
R2 Sill of roof window	Independently assessed	0.77	0.11	0.11	No
R3 Jamb of roof window	Independently assessed	2.48	0.04	0.04	No

Y-value W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Summary for Input Data

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

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
Test Method	Blower Door

22.0 Lighting

No Fixed Lighting	No			
	Name	Efficacy	Power	Capacity
	Pendant	75.00	10.00	750.00
	Downlight	75.00	10.00	750.00
				Count
				9
				9

24.0 Main Heating 1

Manufacturer		
Percentage of Heat	100.00	%
Fuel Type	Mains gas	
SAP Code	104	
In Winter	88.90	
In Summer	80.30	
Model Name	Gas	
Manufacturer	Gas	
Controls SAP Code	2110	
Controls description	Time and temperature zone control by arrangement	
Delayed Start Stat	Yes	
Burner Control	Modulating	
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
Flow Temperature	Enter value
Flow Temperature Value	55.00
Boiler Interlock	Yes
Combi boiler type	Standard Combi
Combi keep hot type	None

25.0 Main Heating 2

26.0 Heat Networks

27.0 Secondary Heating

28.0 Water Heating

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

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

34.0 Small-scale Hydro

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data



Plot Reference	M3.13	Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	M3.13
Plot Address	M3.13	SAP Version	10.2

SAP Rating	84 B	DER	15.33	TER	12.45
Environmental	86 B	% DER < TER			-23.13
CO ₂ Emissions (t/year)	1.3	DFEE	40.21	TFEE	43.55
Compliance Check	See BREL	% DFEE < TFEE			7.66
% DPER < TPER	-31.08	DPER	85.45	TPER	65.19

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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
2.0 Number of Storeys	2
3.0 Date Built	2026
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation
Thermal Mass	156.47 kJ/m²K
7.0 Electricity Tariff	Standard
Smart electricity meter fitted	Yes
Smart gas meter fitted	Yes

7.0 Measurements	Ground floor: 1st Storey:	Heat Loss Perimeter 28.43 m 28.43 m	Internal Floor Area 47.30 m² 47.30 m²	Average Storey Height 2.46 m 2.76 m
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8.0 Living Area	27.43 m²
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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
	External Brick Faced Wall	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	104.29	91.61	0.00	None	12.68	Enter Gross Area
	Ext Weatherboard Wall	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	44.17	39.09	0.00	None	5.08	Enter Gross Area

9.2 Internal Walls	Description	Construction	Kappa (kJ/m²K)	Area (m²)
	Internal Partition	Plasterboard on timber frame	9.00	189.91

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
	Main Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	47.30	47.30	None	0.00	Enter Gross Area	0.00

10.2 Internal Ceilings	Description	Storey	Construction	Kappa	Area (m²)
	Internal Ceiling	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	9.00	47.30

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	47.30

11.2 Internal Floors

Summary for Input Data

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor	+1	Plasterboard ceiling, carpeted chipboard floor	18.00	47.30

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				0.63			1.00
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.29			1.40
Front Solid Door	Manufacturer	Solid Door				0.00			1.00

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Door	External Brick Faced Wall	North	2.15	
Side Elevation	Patio Door	External Brick Faced Wall	West	3.33	
Front Elevation	Window	External Brick Faced Wall	North	3.00	
Side Elevation	Window	External Brick Faced Wall	West	2.30	
Side Elevation	Window	External Brick Faced Wall	East	1.90	
Front Elevation	Window	Ext Weatherboard Wall	North	3.17	
Side Elevation	Window	Ext Weatherboard Wall	East	1.90	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	13.28	0.07	0.07 Hi Therm-KeystoneLintels	No
E3 Sill	Independently assessed	10.70	0.02	0.02 Knauf Insulation	No
E4 Jamb	Independently assessed	32.20	0.01	0.01 Knauf Insulation	No
E5 Ground floor (normal)	Independently assessed	28.43	0.06	0.06 Bison Precast	No
E6 Intermediate floor within a dwelling	Independently assessed	28.43	0.00	0.00 Knauf Insulation	No
E16 Corner (normal)	Independently assessed	20.88	0.04	0.04 Knauf Insulation	No
E10 Eaves (insulation at ceiling level)	Independently assessed	17.82	0.07	0.07 Knauf Insulation	No
E12 Gable (insulation at ceiling level)	Independently assessed	10.65	0.05	0.05 Knauf Insulation	No

Y-value W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	<input type="text" value="Yes"/>
Approved Installation	<input type="text" value="No"/>
Mechanical Ventilation data Type	<input type="text" value="Database"/>
Type	<input type="text" value="Mechanical extract ventilation - decentralised"/>
MV Reference Number	<input type="text" value="500755"/>
Duct Type	<input type="text" value="Rigid"/>
Wet Rooms	<input type="text" value="3"/>

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	<input type="text" value="0"/>
Number of open flues	<input type="text" value="0"/>
Number of chimneys/flues attached to closed fire	<input type="text" value="0"/>
Number of flues attached to solid fuel boiler	<input type="text" value="0"/>
Number of flues attached to other heater	<input type="text" value="0"/>
Number of blocked chimneys	<input type="text" value="0"/>

Summary for Input Data

Number of intermittent extract fans	<input type="text" value="0"/>
Number of passive vents	<input type="text" value="0"/>
Number of flueless gas fires	<input type="text" value="0"/>

21.0 Fixed Cooling System

22.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

22.0 Lighting
No Fixed Lighting

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	8
Downlights	75.00	10.00	750.00	4
Batten Holder	75.00	10.00	750.00	1
Splash Lights	75.00	10.00	750.00	1

24.0 Main Heating 1

Percentage of Heat %

Fuel Type

SAP Code

In Winter

In Summer

Model Name

Manufacturer

Controls SAP Code

Controls description

Delayed Start Stat

Burner Control

Flue Type

Fan Assisted Flue

Is MHS Pumped

Heating Pump Age

Heat Emitter

Flow Temperature

Flow Temperature Value

Boiler Interlock

Combi boiler type

Combi keep hot type

25.0 Main Heating 2

26.0 Heat Networks

27.0 Secondary Heating

28.0 Water Heating

Water Heating

SAP Code

Flue Gas Heat Recovery System

Waste Water Heat Recovery Instantaneous System 1

Waste Water Heat Recovery Instantaneous System 2

Waste Water Heat Recovery Storage System

Solar Panel

Water use <= 125 litres/person/day

Summary for Input Data



Cold Water Source

From mains

Bath Count

1

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

34.0 Small-scale Hydro

None

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

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Plot Reference	M4.12	Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	M4.12
Plot Address	M4.12	SAP Version	10.2

SAP Rating	85 B	DER	12.87	TER	10.43
Environmental	88 B	% DER < TER			-23.39
CO ₂ Emissions (t/year)	1.42	DFEE	34.44	TFEE	36.44
Compliance Check	See BREL	% DFEE < TFEE			5.50
% DPER < TPER	-32.06	DPER	72.04	TPER	54.55

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	
2.0 Number of Storeys	3	
3.0 Date Built	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	167.37	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements	Ground floor:	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	1st Storey:	19.82 m	48.46 m ²	2.46 m
	2nd Storey:	19.82 m	48.46 m ²	2.76 m
		18.73 m	26.75 m ²	2.40 m

8.0 Living Area	38.46	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	119.57	103.23	0.00	None	16.34	Enter Gross Area
	Timber Stud Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.18	9.00	25.30	25.30	0.00	None	0.00	Enter Gross Area
	Dormer Cheek	Timber Frame	Timber framed wall (one layer of plasterboard)	0.26	9.00	6.59	5.36	0.00	None	1.23	Enter Gross Area

9.1 Party Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
	Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	58.74	0.00	None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Metal GF	Plasterboard on timber frame	9.00	61.87
	Metal FF	Plasterboard on timber frame	9.00	105.38
	Metal SF	Plasterboard on timber frame	9.00	16.64

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
	Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	21.11	21.11	None	0.00	Enter Gross Area	0.00
	Dormer Roof	External Flat Roof	Plasterboard, insulated flat roof	0.19	9.00	2.73	2.73	None	0.00	Enter Gross Area	0.00

Summary for Input Data

Exposed Roof	External Plane	Plasterboard, insulated at ceiling level	0.12	9.00	21.71	21.71	None	0.00	Enter Gross Area	0.00
Sloping Roof	External Slope	Plasterboard, insulated slope	0.16	9.00	4.11	4.11	None	0.00	Enter Gross Area	0.00

10.2 Internal Ceilings

Description	Storey	Construction	Kappa	Area (m ²)
Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	9.00	48.46
Internal Ceiling 2	+1	Plasterboard ceiling, carpeted chipboard floor	9.00	26.75

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Suspended Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	48.46

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Floor 1	+1	Plasterboard ceiling, carpeted chipboard floor	18.00	48.46
Internal Floor 2	+2	Plasterboard ceiling, carpeted chipboard floor	18.00	26.75

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Front Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1			0.63		0.70	1.00
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.29			1.40
Rooflight	BFRC, BSI or CERTASS data	Roof Light	Double Low-E Hard 0.15			0.63			1.20
Storage Door	Manufacturer	Solid Door				0.00			2.00

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
D01	Front Door	Brickwork	North	2.15	
D02	Patio Door	Brickwork	South	3.80	
W01,2,5,6	Window	Brickwork	North	4.25	
W07	Window	Dormer Cheek	North	1.23	
W03,7,8	Window	Brickwork	South	3.84	
W04,9	Window	Brickwork	South	2.30	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E12 Gable (insulation at ceiling level)	Independently assessed	3.83	0.05	0.05	No
E1 Steel lintel with perforated steel base plate	Independently assessed	11.70	0.07	0.07	No
E3 Sill	Independently assessed	8.87	0.02	0.02	No
E4 Jamb	Independently assessed	29.40	0.01	0.01	No
E5 Ground floor (normal)	Independently assessed	19.82	0.06	0.06	No
E6 Intermediate floor within a dwelling	Independently assessed	38.54	0.00	0.00	No
E16 Corner (normal)	Independently assessed	15.23	0.04	0.04	No
E17 Corner (inverted – internal area greater than external area)	Independently assessed	0.00	-0.09	-0.09	No
E16 Corner (normal)	Table K1 - Default	2.42	0.18	0.18	Timber Wall
E17 Corner (inverted – internal area greater than external area)	Table K1 - Default	5.60	0.00	0.00	TS Wall
E16 Corner (normal)	Independently assessed	3.93	0.04	0.04	Stormking Data
R9 Roof to wall (flat ceiling)	Independently assessed	5.32	0.06	0.06	No
R7 Flat ceiling (inverted)	Independently assessed	8.34	0.03	0.03	No
R6 Flat ceiling	Independently assessed	11.02	0.02	0.02	No
R8 Roof to wall (rafter)	Independently assessed	4.12	0.05	0.05	No
R1 Head of roof window	Independently assessed	1.02	0.09	0.09	Stormking Data
R2 Sill of roof window	Independently assessed	1.02	0.09	0.09	Stormking Data
R3 Jamb of roof window	Independently assessed	2.40	0.09	0.09	Stormking Data
E13 Gable (insulation at rafter level)	Independently assessed	6.88	0.09	0.09	No
E11 Eaves (insulation at rafter level)	Independently assessed	11.02	0.04	0.04	No
P1 Party wall - Ground floor	Independently assessed	8.79	0.07	0.07	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	13.09	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	3.83	0.07	0.07	No
P5 Party wall - Roof (insulation at rafter level)	Independently assessed	6.79	0.04	0.04	No
E18 Party wall between dwellings	Independently assessed	10.96	0.04	0.04	No
E18 Party wall between dwellings	Table K1 - Default	4.50	0.24	0.24	Timber Loft Wall

Y-value W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

Summary for Input Data

Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	3

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

Designed AP ₅₀	3.50	m ³ /(h.m ²) @ 50 Pa
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	8

24.0 Main Heating 1

Manufacturer		
Percentage of Heat	100.00	%
Fuel Type	Mains gas	
SAP Code	104	
In Winter	88.90	
In Summer	80.30	
Model Name	Gas	
Manufacturer	Gas	
Controls SAP Code	2110	
Controls description	Time and temperature zone control by arrangement	
Delayed Start Stat	Yes	
Burner Control	Modulating	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	

Summary for Input Data

Heating Pump Age	2013 or later
Heat Emitter	Radiators
Flow Temperature	Enter value
Flow Temperature Value	55.00
Boiler Interlock	Yes
Combi boiler type	Standard Combi
Combi keep hot type	None

25.0 Main Heating 2

26.0 Heat Networks

27.0 Secondary Heating

28.0 Water Heating

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

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

34.0 Small-scale Hydro

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

Recommendations

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

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

Summary for Input Data



Plot Reference	1 BED FLAT GF		Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	1 BED FLAT GF	
Plot Address	1 BED FLAT GF		SAP Version	10.2

SAP Rating	80 C	DER	6.22	TER	14.94
Environmental	96 A	% DER < TER			58.37
CO ₂ Emissions (t/year)	0.25	DFEE	33.84	TFEE	37.31
Compliance Check	See BREL	% DFEE < TFEE			9.31
% DPER < TPER	18.79	DPER	64.29	TPER	79.17

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	247.35	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:	22.01 m	50.50 m ²	2.40 m

8.0 Living Area	24.78	m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.20	110.00	42.07	33.58	0.00	None	8.49	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.28	110.00	10.75	8.63	0.50	Stairwell Access Corridor 1	2.12	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	15.63	0.00	None

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Timber Partition	Plasterboard on timber frame	9.00	91.82

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Party Ceiling 1	Precast concrete planks floor, screed, carpeted	30.00	50.50

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
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Summary for Input Data

Suspended Floor Ground Floor - Solid Lowest occupied Suspended concrete floor, carpeted 0.12 None 0.00 75.00 50.50

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			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.35			1.30
Front Solid Door	Manufacturer	Solid Door				0.00			1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	
Bottom Windows	Window	Brickwork	South	3.22	
Patio Door	Patio Door	Brickwork	North	3.89	
Top Windows	Window	Brickwork	North	1.38	

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	5.77	0.06	0.06 Keystone Lintels	No
E4 Jamb	Independently assessed	17.95	0.01	0.01	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	22.01	0.05	0.05	No
E16 Corner (normal)	Non Gov Approved Schemes	7.20	0.06	0.06 RCD	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	6.51	0.00	0.00 Table K1	No
E25 Staggered party wall between dwellings	Non Gov Approved Schemes	2.40	0.03	0.03 RCD	No
E5 Ground floor (normal)	Independently assessed	22.01	0.06	0.06	No
P1 Party wall - Ground floor	Independently assessed	6.51	0.05	0.05	No
E3 Sill	Independently assessed	2.95	0.02	0.02	No
E18 Party wall between dwellings	Non Gov Approved Schemes	2.40	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	500776
Duct Type	Rigid
Wet Rooms	2

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.14	In Room Fan Kitchen	1
0.11	In Room Fan Other Wet Room	1
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.08	Through Wall Fan Kitchen	0
0.08	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

Number of flueless gas fires

21.0 Fixed Cooling System

22.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

22.0 Lighting

No Fixed Lighting

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

Percentage of Heat %

Fuel Type

SAP Code

In Winter

In Summer

Controls SAP Code

Controls description

25.0 Main Heating 2

Percentage of Heat %

Database Ref. No.

Fuel Type

In Winter

In Summer

Model Name

Manufacturer

Controls

Controls description

26.0 Heat Networks

27.0 Secondary Heating

28.0 Water Heating

Water Heating

SAP Code

Flue Gas Heat Recovery System

Waste Water Heat Recovery Instantaneous System 1

Waste Water Heat Recovery Instantaneous System 2

Waste Water Heat Recovery Storage System

Solar Panel

Water use <= 125 litres/person/day

Cold Water Source

Bath Count

Immersion Only Heating Hot Water

28.1 Showers

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

28.3 Waste Water Heat Recovery System

Summary for Input Data



29.0 Hot Water Cylinder

Insulation Type	Internal Store	
Cylinder Volume	Measured Loss	
Loss	200.00	L
	1.61	kWh/day

34.0 Small-scale Hydro

None

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Plot Reference	1 BED FLAT MF		Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	1 BED FLAT MF	
Plot Address	1 BED FLAT MF		SAP Version	10.2

SAP Rating	84 B	DER	5.14	TER	12.89
Environmental	97 A	% DER < TER			60.12
CO ₂ Emissions (t/year)	0.21	DFEE	26.80	TFEE	27.51
Compliance Check	See BREL	% DFEE < TFEE			2.56
% DPER < TPER	21.73	DPER	53.31	TPER	68.12

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	2	
2.0 Number of Storeys	1	
3.0 Date Built	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	212.35	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:	22.01 m	50.50 m ²	2.40 m

8.0 Living Area	24.78	m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.20	110.00	42.07	33.58	0.00	None	8.49	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.28	110.00	10.75	8.63	0.60	Stairwell Access Corridor 2	2.12	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	15.63	0.00	None

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Timber Partition	Plasterboard on timber frame	9.00	91.82

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Party Ceiling 1	Precast concrete planks floor, screed, carpeted	30.00	50.50

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
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Summary for Input Data

Party Floor 1 Lowest occupied Precast concrete planks floor, screed, carpeted 40.00 50.50

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			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.35			1.30
Front Solid Door	Manufacturer	Solid Door				0.00			1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	
Bottom Windows	Window	Brickwork	South	3.22	
Patio Door	Patio Door	Brickwork	North	3.89	
Top Windows	Window	Brickwork	North	1.38	

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	5.77	0.06	0.06	No
E4 Jamb	Independently assessed	17.95	0.01	0.01	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	44.02	0.05	0.05	No
E16 Corner (normal)	Non Gov Approved Schemes	7.20	0.06	0.06	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	13.02	0.00	0.00	No
E25 Staggered party wall between dwellings	Non Gov Approved Schemes	2.40	0.03	0.03	No
E3 Sill	Independently assessed	2.95	0.02	0.02	No
E18 Party wall between dwellings	Non Gov Approved Schemes	2.40	0.04	0.04	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	500776
Duct Type	Rigid
Wet Rooms	2

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.14	In Room Fan Kitchen	1
0.11	In Room Fan Other Wet Room	1
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.08	Through Wall Fan Kitchen	0
0.08	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

Summary for Input Data

Number of flueless gas fires	<input type="text" value="0"/>				
21.0 Fixed Cooling System	<input type="text" value="No"/>				
22.0 Pressure Testing	<input type="text" value="Yes"/>				
Designed AP ₅₀	<input type="text" value="4.00"/>	m³/(h.m²) @ 50 Pa			
Test Method	<input type="text" value="Blower Door"/>				
22.0 Lighting	<input type="text" value="No"/>				
No Fixed Lighting	<input type="text" value="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	<input type="text" value="SAP table"/>				
Percentage of Heat	<input type="text" value="100.00"/>	%			
Fuel Type	<input type="text" value="Electricity"/>				
SAP Code	<input type="text" value="691"/>				
In Winter	<input type="text" value="100.00"/>				
In Summer	<input type="text" value="324.52"/>				
Controls SAP Code	<input type="text" value="2605"/>				
Controls description	<input type="text" value="Programmer and room thermostat"/>				
25.0 Main Heating 2	<input type="text" value="Database"/>				
Percentage of Heat	<input type="text" value="0.00"/>	%			
Database Ref. No.	<input type="text" value="104014"/>				
Fuel Type	<input type="text" value="Electricity"/>				
In Winter	<input type="text" value="0.00"/>				
In Summer	<input type="text" value="324.52"/>				
Model Name	<input type="text" value="aroSTOR 200ltr"/>				
Manufacturer	<input type="text" value="Vaillant Group UK Ltd"/>				
Controls	<input type="text" value="2100"/>				
Controls description	<input type="text" value="Not applicable (heating provides DHW only)"/>				
26.0 Heat Networks	<input type="text" value="None"/>				
27.0 Secondary Heating	<input type="text" value="None"/>				
28.0 Water Heating	<input type="text" value="Main Heating 2"/>				
Water Heating	<input type="text" value="Main Heating 2"/>				
SAP Code	<input type="text" value="914"/>				
Flue Gas Heat Recovery System	<input type="text" value="No"/>				
Waste Water Heat Recovery Instantaneous System 1	<input type="text" value="No"/>				
Waste Water Heat Recovery Instantaneous System 2	<input type="text" value="No"/>				
Waste Water Heat Recovery Storage System	<input type="text" value="No"/>				
Solar Panel	<input type="text" value="No"/>				
Water use <= 125 litres/person/day	<input type="text" value="Yes"/>				
Cold Water Source	<input type="text" value="From mains"/>				
Bath Count	<input type="text" value="1"/>				
Immersion Only Heating Hot Water	<input type="text" value="No"/>				
28.1 Showers					
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					

Summary for Input Data



29.0 Hot Water Cylinder

Insulation Type

Internal Store

Cylinder Volume

200.00

L

Loss

1.61

kWh/day

34.0 Small-scale Hydro

None

Jan

Feb

Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

Nov

Dec

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Plot Reference	1 BED FLAT TF		Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	1 BED FLAT TF	
Plot Address	1 BED FLAT TF		SAP Version	10.2

SAP Rating	81 B	DER	6.07	TER	14.34
Environmental	96 A	% DER < TER			57.67
CO ₂ Emissions (t/year)	0.25	DFEE	32.78	TFEE	34.19
Compliance Check	See BREL	% DFEE < TFEE			4.11
% DPER < TPER	17.33	DPER	62.77	TPER	75.93

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	Top-floor flat	
Which Floor	3	
2.0 Number of Storeys	1	
3.0 Date Built	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	191.35	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements	Ground floor:	Heat Loss Perimeter 22.01 m	Internal Floor Area 50.50 m ²	Average Storey Height 2.40 m
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8.0 Living Area	24.78	m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.20	110.00	42.07	33.58	0.00	None	8.49	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.28	110.00	10.75	8.63	0.50	Stairwell Access Corridor 1	2.12	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	15.63	0.00	None

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Timber Partition	Plasterboard on timber frame	9.00	91.82

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
External Roof 1	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	50.50	50.50	None	0.00	Enter Gross Area	0.00

11.1 Party Floors

Summary for Input Data

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor 1	Lowest occupied	Precast concrete planks floor, screed, carpeted	40.00	50.50

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			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.35			1.30
Front Solid Door	Manufacturer	Solid Door				0.00			1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	
Bottom Windows	Window	Brickwork	South	3.22	
Patio Door	Patio Door	Brickwork	North	3.89	
Top Windows	Window	Brickwork	North	1.38	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	5.77	0.06	0.06 Keystone Lintels	No
E4 Jamb	Independently assessed	17.95	0.01	0.01	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	22.01	0.05	0.05	No
E16 Corner (normal)	Non Gov Approved Schemes	7.20	0.06	0.06 RCD	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	6.51	0.00	0.00 Table K1	No
E25 Staggered party wall between dwellings	Non Gov Approved Schemes	2.40	0.03	0.03 RCD	No
E3 Sill	Independently assessed	2.95	0.02	0.02	No
E18 Party wall between dwellings	Non Gov Approved Schemes	2.40	0.04	0.04 RCD	No
E10 Eaves (insulation at ceiling level)	Independently assessed	17.52	0.07	0.07	No
E12 Gable (insulation at ceiling level)	Independently assessed	4.48	0.06	0.06	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	6.51	0.07	0.07	No

Y-value W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	<input type="text" value="Yes"/>
Approved Installation	<input type="text" value="Yes"/>
Mechanical Ventilation data Type	<input type="text" value="Database"/>
Type	<input type="text" value="Mechanical extract ventilation - decentralised"/>
MV Reference Number	<input type="text" value="500776"/>
Duct Type	<input type="text" value="Rigid"/>
Wet Rooms	<input type="text" value="2"/>

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	<input type="text" value="0"/>
Number of open flues	<input type="text" value="0"/>
Number of chimneys/flues attached to closed fire	<input type="text" value="0"/>
Number of flues attached to solid fuel boiler	<input type="text" value="0"/>
Number of flues attached to other heater	<input type="text" value="0"/>

Summary for Input Data

Number of blocked chimneys	<input type="text" value="0"/>
Number of intermittent extract fans	<input type="text" value="0"/>
Number of passive vents	<input type="text" value="0"/>
Number of flueless gas fires	<input type="text" value="0"/>

21.0 Fixed Cooling System	<input type="text" value="No"/>
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22.0 Pressure Testing	<input type="text" value="Yes"/>	
Designed AP ₅₀	<input type="text" value="4.00"/>	m ³ /(h.m ²) @ 50 Pa
Test Method	<input type="text" value="Blower Door"/>	

22.0 Lighting	<input type="text" value="No"/>				
No Fixed Lighting	<input type="text" value="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	<input type="text" value="SAP table"/>	
Percentage of Heat	<input type="text" value="100.00"/>	%
Fuel Type	<input type="text" value="Electricity"/>	
SAP Code	<input type="text" value="691"/>	
In Winter	<input type="text" value="100.00"/>	
In Summer	<input type="text" value="324.52"/>	
Controls SAP Code	<input type="text" value="2605"/>	
Controls description	<input type="text" value="Programmer and room thermostat"/>	

25.0 Main Heating 2	<input type="text" value="Database"/>	
Percentage of Heat	<input type="text" value="0.00"/>	%
Database Ref. No.	<input type="text" value="104014"/>	
Fuel Type	<input type="text" value="Electricity"/>	
In Winter	<input type="text" value="0.00"/>	
In Summer	<input type="text" value="324.52"/>	
Model Name	<input type="text" value="aroSTOR 200ltr"/>	
Manufacturer	<input type="text" value="Vaillant Group UK Ltd"/>	
Controls	<input type="text" value="2100"/>	
Controls description	<input type="text" value="Not applicable (heating provides DHW only)"/>	

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

28.1 Showers

Summary for Input Data

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

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Internal Store	
Insulation Type	Measured Loss
Cylinder Volume	200.00
Loss	1.61

L kWh/day

34.0 Small-scale Hydro

None											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Recommendations

Lower cost measures
None

Further measures to achieve even higher standards
None

Summary for Input Data

Plot Reference	2 BED FLAT GF		Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	2 BED FLAT GF	
Plot Address	2 BED FLAT GF		SAP Version	10.2

SAP Rating	81 B	DER	5.05	TER	11.84
Environmental	96 A	% DER < TER			57.35
CO ₂ Emissions (t/year)	0.29	DFEE	27.74	TFEE	30.67
Compliance Check	See BREL	% DFEE < TFEE			9.54
% DPER < TPER	16.24	DPER	52.21	TPER	62.33

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	234.13	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:	22.18 m	70.63 m²	2.40 m

8.0 Living Area	28.43	m²
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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	0.20	110.00	41.68	33.19	0.00	None	8.49	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.28	110.00	11.54	9.42	0.50	Stairwell Access Corridor 1	2.12	Enter Gross Area

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	30.20	0.00	None

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Timber Partition	Plasterboard on timber frame	9.00	123.50

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling 1	Precast concrete planks floor, screed, carpeted	30.00	70.63

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
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Summary for Input Data

Suspended Floor Ground Floor - Solid Lowest occupied Suspended concrete floor, carpeted 0.12 None 0.00 75.00 70.63

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			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.35			1.30
Front Solid Door	Manufacturer	Solid Door				0.00			1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	
Bottom Windows	Window	Brickwork	South	3.22	
Patio Door	Patio Door	Brickwork	East	3.89	
Top Windows	Window	Brickwork	East	1.38	

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	5.77	0.06	0.06 Keystone Lintels	No
E4 Jamb	Independently assessed	17.95	0.01	0.01	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	22.18	0.05	0.05	No
E16 Corner (normal)	Non Gov Approved Schemes	2.40	0.06	0.06 RCD	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	12.58	0.00	0.00 Table K1	No
E25 Staggered party wall between dwellings	Non Gov Approved Schemes	4.80	0.03	0.03 RCD	No
E5 Ground floor (normal)	Independently assessed	22.18	0.06	0.06	No
P1 Party wall - Ground floor	Independently assessed	12.58	0.05	0.05	No
E3 Sill	Independently assessed	2.95	0.02	0.02	No
E18 Party wall between dwellings	Non Gov Approved Schemes	4.80	0.04	0.04 RCD	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	500776
Duct Type	Rigid
Wet Rooms	2

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.14	In Room Fan Kitchen	1
0.11	In Room Fan Other Wet Room	1
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.08	Through Wall Fan Kitchen	0
0.08	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

Number of flueless gas fires

21.0 Fixed Cooling System

22.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

22.0 Lighting

No Fixed Lighting

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

Percentage of Heat %

Fuel Type

SAP Code

In Winter

In Summer

Controls SAP Code

Controls description

25.0 Main Heating 2

Percentage of Heat %

Database Ref. No.

Fuel Type

In Winter

In Summer

Model Name

Manufacturer

Controls

Controls description

26.0 Heat Networks

27.0 Secondary Heating

28.0 Water Heating

Water Heating

SAP Code

Flue Gas Heat Recovery System

Waste Water Heat Recovery Instantaneous System 1

Waste Water Heat Recovery Instantaneous System 2

Waste Water Heat Recovery Storage System

Solar Panel

Water use <= 125 litres/person/day

Cold Water Source

Bath Count

Immersion Only Heating Hot Water

28.1 Showers

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

28.3 Waste Water Heat Recovery System

Summary for Input Data



29.0 Hot Water Cylinder

Insulation Type	Internal Store	
Cylinder Volume	Measured Loss	
Loss	200.00	L
	1.61	kWh/day

34.0 Small-scale Hydro

None

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Plot Reference	2 BED FLAT MF		Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	2 BED FLAT MF	
Plot Address	2 BED FLAT MF		SAP Version	10.2

SAP Rating	85 B	DER	4.00	TER	9.91
Environmental	97 A	% DER < TER			59.64
CO ₂ Emissions (t/year)	0.23	DFEE	20.86	TFEE	21.50
Compliance Check	See BREL	% DFEE < TFEE			3.01
% DPER < TPER	20.01	DPER	41.55	TPER	51.94

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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

Orientation	North
Property Tenure	1
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	Flat, Mid-Terrace
Position of Flat	Mid-floor flat
Which Floor	2
2.0 Number of Storeys	1
3.0 Date Built	2026
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation
Thermal Mass	199.13 kJ/m ² K
7.0 Electricity Tariff	Standard
Smart electricity meter fitted	Yes
Smart gas meter fitted	Yes

7.0 Measurements	Ground floor:	Heat Loss Perimeter 22.18 m	Internal Floor Area 70.63 m ²	Average Storey Height 2.40 m
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8.0 Living Area	28.43 m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.20	110.00	41.68	33.19	0.00	None	8.49	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.28	110.00	11.54	9.42	0.60	Stairwell Access Corridor 2	2.12	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	30.20	0.00	None

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Timber Partition	Plasterboard on timber frame	9.00	123.50

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Party Ceiling 1	Precast concrete planks floor, screed, carpeted	30.00	70.63

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
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Summary for Input Data

Party Floor 1 Lowest occupied Precast concrete planks floor, screed, carpeted 40.00 70.63

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			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.35			1.30
Front Solid Door	Manufacturer	Solid Door				0.00			1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	
Bottom Windows	Window	Brickwork	South	3.22	
Patio Door	Patio Door	Brickwork	East	3.89	
Top Windows	Window	Brickwork	East	1.38	

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	5.77	0.06	0.06	No
E4 Jamb	Independently assessed	17.95	0.01	0.01	No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	44.36	0.05	0.05	No
E16 Corner (normal)	Non Gov Approved Schemes	2.40	0.06	0.06	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	25.16	0.00	0.00	No
E25 Staggered party wall between dwellings	Non Gov Approved Schemes	4.80	0.03	0.03	No
E3 Sill	Independently assessed	2.95	0.02	0.02	No
E18 Party wall between dwellings	Non Gov Approved Schemes	4.80	0.04	0.04	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	500776
Duct Type	Rigid
Wet Rooms	2

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.14	In Room Fan Kitchen	1
0.11	In Room Fan Other Wet Room	1
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.08	Through Wall Fan Kitchen	0
0.08	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

Summary for Input Data

Number of flueless gas fires	<input type="text" value="0"/>				
21.0 Fixed Cooling System	<input type="text" value="No"/>				
22.0 Pressure Testing	<input type="text" value="Yes"/>				
Designed AP ₅₀	<input type="text" value="4.00"/>	m³/(h.m²) @ 50 Pa			
Test Method	<input type="text" value="Blower Door"/>				
22.0 Lighting	<input type="text" value="No"/>				
No Fixed Lighting	<input type="text" value="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	<input type="text" value="SAP table"/>				
Percentage of Heat	<input type="text" value="100.00"/>	%			
Fuel Type	<input type="text" value="Electricity"/>				
SAP Code	<input type="text" value="691"/>				
In Winter	<input type="text" value="100.00"/>				
In Summer	<input type="text" value="324.52"/>				
Controls SAP Code	<input type="text" value="2605"/>				
Controls description	<input type="text" value="Programmer and room thermostat"/>				
25.0 Main Heating 2	<input type="text" value="Database"/>				
Percentage of Heat	<input type="text" value="0.00"/>	%			
Database Ref. No.	<input type="text" value="104014"/>				
Fuel Type	<input type="text" value="Electricity"/>				
In Winter	<input type="text" value="0.00"/>				
In Summer	<input type="text" value="324.52"/>				
Model Name	<input type="text" value="aroSTOR 200ltr"/>				
Manufacturer	<input type="text" value="Vaillant Group UK Ltd"/>				
Controls	<input type="text" value="2100"/>				
Controls description	<input type="text" value="Not applicable (heating provides DHW only)"/>				
26.0 Heat Networks	<input type="text" value="None"/>				
27.0 Secondary Heating	<input type="text" value="None"/>				
28.0 Water Heating	<input type="text" value="Main Heating 2"/>				
Water Heating	<input type="text" value="Main Heating 2"/>				
SAP Code	<input type="text" value="914"/>				
Flue Gas Heat Recovery System	<input type="text" value="No"/>				
Waste Water Heat Recovery Instantaneous System 1	<input type="text" value="No"/>				
Waste Water Heat Recovery Instantaneous System 2	<input type="text" value="No"/>				
Waste Water Heat Recovery Storage System	<input type="text" value="No"/>				
Solar Panel	<input type="text" value="No"/>				
Water use <= 125 litres/person/day	<input type="text" value="Yes"/>				
Cold Water Source	<input type="text" value="From mains"/>				
Bath Count	<input type="text" value="1"/>				
Immersion Only Heating Hot Water	<input type="text" value="No"/>				
28.1 Showers					
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					

Summary for Input Data

29.0 Hot Water Cylinder

Insulation Type

Internal Store

Cylinder Volume

200.00

L

Loss

1.61

kWh/day

34.0 Small-scale Hydro

None

Jan

Feb

Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

Nov

Dec

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Plot Reference	2 BED FLAT TF		Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	2 BED FLAT TF	
Plot Address	2 BED FLAT TF		SAP Version	10.2

SAP Rating	81 B	DER	5.06	TER	11.59
Environmental	96 A	% DER < TER			56.34
CO ₂ Emissions (t/year)	0.29	DFEE	27.73	TFEE	29.28
Compliance Check	See BREL	% DFEE < TFEE			5.29
% DPER < TPER	14.19	DPER	52.33	TPER	60.98

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	Top-floor flat	
Which Floor	3	
2.0 Number of Storeys	1	
3.0 Date Built	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	178.13	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements	Ground floor:	Heat Loss Perimeter 22.18 m	Internal Floor Area 70.63 m ²	Average Storey Height 2.40 m
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8.0 Living Area	28.43	m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
Brickwork	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.20	110.00	41.68	33.19	0.00	None	8.49	Enter Gross Area
Wall to Unheated Corridor	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.28	110.00	11.54	9.42	0.50	Stairwell Access Corridor 1	2.12	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	30.20	0.00	None

Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Timber Partition	Plasterboard on timber frame	9.00	123.50

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	70.63	70.63	None	0.00	Enter Gross Area	0.00

11.1 Party Floors

Summary for Input Data

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor 1	Lowest occupied	Precast concrete planks floor, screed, carpeted	40.00	70.63

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			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.35			1.30
Front Solid Door	Manufacturer	Solid Door				0.00			1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Solid Door	Wall to Unheated Corridor	North	2.12	
Bottom Windows	Window	Brickwork	South	3.22	
Patio Door	Patio Door	Brickwork	East	3.89	
Top Windows	Window	Brickwork	East	1.38	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted	Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	5.77	0.06	0.06	Keystone Lintels	No
E4 Jamb	Independently assessed	17.95	0.01	0.01		No
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	22.18	0.05	0.05		No
E16 Corner (normal)	Non Gov Approved Schemes	2.40	0.06	0.06	RCD	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	12.58	0.00	0.00	Table K1	No
E25 Staggered party wall between dwellings	Non Gov Approved Schemes	4.80	0.03	0.03	RCD	No
E3 Sill	Independently assessed	2.95	0.02	0.02		No
E18 Party wall between dwellings	Non Gov Approved Schemes	4.80	0.04	0.04	RCD	No
E10 Eaves (insulation at ceiling level)	Independently assessed	34.73	0.07	0.07		No
E12 Gable (insulation at ceiling level)	Independently assessed	4.81	0.06	0.06		No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	12.58	0.07	0.07		No

Y-value W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	<input type="text" value="Yes"/>
Approved Installation	<input type="text" value="Yes"/>
Mechanical Ventilation data Type	<input type="text" value="Database"/>
Type	<input type="text" value="Mechanical extract ventilation - decentralised"/>
MV Reference Number	<input type="text" value="500776"/>
Duct Type	<input type="text" value="Rigid"/>
Wet Rooms	<input type="text" value="2"/>

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	<input type="text" value="0"/>
Number of open flues	<input type="text" value="0"/>
Number of chimneys/flues attached to closed fire	<input type="text" value="0"/>
Number of flues attached to solid fuel boiler	<input type="text" value="0"/>
Number of flues attached to other heater	<input type="text" value="0"/>

Summary for Input Data

Number of blocked chimneys	<input type="text" value="0"/>
Number of intermittent extract fans	<input type="text" value="0"/>
Number of passive vents	<input type="text" value="0"/>
Number of flueless gas fires	<input type="text" value="0"/>

21.0 Fixed Cooling System

22.0 Pressure Testing

Designed AP ₅₀	<input type="text" value="4.00"/>	m ³ /(h.m ²) @ 50 Pa
Test Method	<input type="text" value="Blower Door"/>	

22.0 Lighting

No Fixed Lighting

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

	<input type="text" value="SAP table"/>	
Percentage of Heat	<input type="text" value="100.00"/>	%
Fuel Type	<input type="text" value="Electricity"/>	
SAP Code	<input type="text" value="691"/>	
In Winter	<input type="text" value="100.00"/>	
In Summer	<input type="text" value="324.52"/>	
Controls SAP Code	<input type="text" value="2605"/>	
Controls description	<input type="text" value="Programmer and room thermostat"/>	

25.0 Main Heating 2

	<input type="text" value="Database"/>	
Percentage of Heat	<input type="text" value="0.00"/>	%
Database Ref. No.	<input type="text" value="104014"/>	
Fuel Type	<input type="text" value="Electricity"/>	
In Winter	<input type="text" value="0.00"/>	
In Summer	<input type="text" value="324.52"/>	
Model Name	<input type="text" value="aroSTOR 200ltr"/>	
Manufacturer	<input type="text" value="Vaillant Group UK Ltd"/>	
Controls	<input type="text" value="2100"/>	
Controls description	<input type="text" value="Not applicable (heating provides DHW only)"/>	

26.0 Heat Networks

27.0 Secondary Heating

28.0 Water Heating

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

28.1 Showers

Summary for Input Data



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

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Internal Store	
Insulation Type	Measured Loss
Cylinder Volume	200.00 L
Loss	1.61 kWh/day

34.0 Small-scale Hydro

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
None											

Recommendations

Lower cost measures
None

Further measures to achieve even higher standards
None

Summary for Input Data

Plot Reference	M2.3	Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	M2.3
Plot Address	M2.3	SAP Version	10.2

SAP Rating	86 B	DER	3.42	TER	11.35
Environmental	97 A	% DER < TER			69.87
CO ₂ Emissions (t/year)	0.24	DFEE	33.77	TFEE	36.19
Compliance Check	See BREL	% DFEE < TFEE			6.68
% DPER < TPER	39.38	DPER	35.92	TPER	59.26

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	
2.0 Number of Storeys	2	
3.0 Date Built	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	189.74	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements	Ground floor:	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	1st Storey:	18.00 m	40.15 m ²	2.46 m
		18.00 m	40.15 m ²	2.76 m

8.0 Living Area	34.42	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	93.96	78.74	0.00	None	15.22	Calculate Wall Area

9.1 Party Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
	Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	42.96	0.00	None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Metal GF	Plasterboard on timber frame	9.00	52.49
	Metal FF	Plasterboard on timber frame	9.00	95.26

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
	Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	40.15	40.15	None	0.00	Calculate Wall Area	0.00

10.2 Internal Ceilings	Description	Storey	Construction	Kappa	Area (m ²)
	Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	9.00	40.15

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	40.15

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1	+1	Plasterboard ceiling, carpeted chipboard floor	18.00	40.15

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	1.00
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.29			1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door	Brickwork	North	2.14	
D02	Patio Door	Brickwork	South	5.23	
W01	Window	Brickwork	North	1.08	
W02 (ground floor)	Window	Brickwork	South	0.83	
W03	Window	Brickwork	North	1.54	
W04	Window	Brickwork	South	1.63	
W05	Window	Brickwork	South	1.22	
W06	Window	Brickwork	East	0.83	
W02 (first floor)	Window	Brickwork	North	0.71	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E10 Eaves (insulation at ceiling level)	Independently assessed	9.75	0.07	0.07	No
E12 Gable (insulation at ceiling level)	Independently assessed	8.23	0.05	0.05	No
E1 Steel lintel with perforated steel base plate	Independently assessed	10.01	0.07	0.07	No
E3 Sill	Independently assessed	6.50	0.02	0.02	No
E4 Jamb	Independently assessed	25.20	0.01	0.01	No
E5 Ground floor (normal)	Independently assessed	18.00	0.06	0.06	No
E6 Intermediate floor within a dwelling	Independently assessed	18.00	0.00	0.00	No
E16 Corner (normal)	Independently assessed	10.44	0.04	0.04	Yes
E18 Party wall between dwellings	Independently assessed	10.44	0.04	0.04	Yes
P1 Party wall - Ground floor	Independently assessed	8.23	0.07	0.07	No
P2 Party wall - Intermediate floor within a dwelling	Independently assessed	8.23	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	8.23	0.07	0.07	No

Y-value W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

Approved Installation

Mechanical Ventilation data Type

Type

MV Reference Number

Duct Type

Wet Rooms

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.15	In Room Fan	1
	Kitchen	
0.15	In Room Fan Other	3
	Wet Room	
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other	0
	Wet Room	
0.11	Through Wall Fan	0
	Kitchen	
0.14	Through Wall Fan	0
	Other Wet Room	

20.0 Fans, Open Fireplaces, Flues

Summary for Input Data

Number of open chimneys	<input type="text" value="0"/>				
Number of open flues	<input type="text" value="0"/>				
Number of chimneys/flues attached to closed fire	<input type="text" value="0"/>				
Number of flues attached to solid fuel boiler	<input type="text" value="0"/>				
Number of flues attached to other heater	<input type="text" value="0"/>				
Number of blocked chimneys	<input type="text" value="0"/>				
Number of intermittent extract fans	<input type="text" value="0"/>				
Number of passive vents	<input type="text" value="0"/>				
Number of flueless gas fires	<input type="text" value="0"/>				

21.0 Fixed Cooling System	<input type="text" value="No"/>				
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22.0 Pressure Testing	<input type="text" value="Yes"/>				
Designed AP ₅₀	<input type="text" value="4.50"/>	m³/(h.m²) @ 50 Pa			
Test Method	<input type="text" value="Blower Door"/>				

22.0 Lighting	<input type="text" value="No"/>				
No Fixed Lighting	<input type="text" value="No"/>				

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	6
Downlight	75.00	10.00	750.00	16

24.0 Main Heating 1	<input type="text" value="Database"/>				
Percentage of Heat	<input type="text" value="100.00"/>	%			
Database Ref. No.	<input type="text" value="104432"/>				
Fuel Type	<input type="text" value="Electricity"/>				
In Winter	<input type="text" value="281.43"/>				
In Summer	<input type="text" value="285.85"/>				
Model Name	<input type="text" value="aroTHERM plus 7kW + AI"/>				
Manufacturer	<input type="text" value="Vaillant Group UK Ltd"/>				
System Type	<input type="text" value="Heat Pump"/>				
Controls SAP Code	<input type="text" value="2207"/>				
Controls description	<input type="text" value="Time and temperature zone control by arrangement"/>				
Is MHS Pumped	<input type="text" value="Pump in heated space"/>				
Heating Pump Age	<input type="text" value="2013 or later"/>				
Heat Emitter	<input type="text" value="Radiators and Underfloor"/>				
Underfloor Heating	<input type="text" value="Yes - Pipes in thin screed"/>				
Flow Temperature	<input type="text" value="Enter value"/>				
Flow Temperature Value	<input type="text" value="45.00"/>				

25.0 Main Heating 2	<input type="text" value="None"/>				
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26.0 Heat Networks	<input type="text" value="None"/>				
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27.0 Secondary Heating	<input type="text" value="None"/>				
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28.0 Water Heating	<input type="text" value="Main Heating 1"/>				
Water Heating	<input type="text" value="Main Heating 1"/>				
SAP Code	<input type="text" value="901"/>				
Flue Gas Heat Recovery System	<input type="text" value="No"/>				
Waste Water Heat Recovery Instantaneous System 1	<input type="text" value="No"/>				
Waste Water Heat Recovery Instantaneous System 2	<input type="text" value="No"/>				
Waste Water Heat Recovery Storage System	<input type="text" value="No"/>				
Solar Panel	<input type="text" value="No"/>				
Water use <= 125 litres/person/day	<input type="text" value="Yes"/>				

Summary for Input Data

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
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	Hot Water Cylinder				
Cylinder Stat	Yes				
Cylinder In Heated Space	Yes				
Independent Time Control	Yes				
Insulation Type	Measured Loss				
Cylinder Volume	150.00			L	
Loss	1.00			kWh/day	
Pipes insulation	Fully insulated primary pipework				

31.0 Thermal Store

None

34.0 Small-scale Hydro

None												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data



Plot Reference	M2.5	Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	M2.5
Plot Address	M2.5	SAP Version	10.2

SAP Rating	85 B	DER	3.77	TER	11.60
Environmental	97 A	% DER < TER			67.50
CO ₂ Emissions (t/year)	0.28	DFEE	33.74	TFEE	36.19
Compliance Check	See BREL	% DFEE < TFEE			6.77
% DPER < TPER	34.91	DPER	39.50	TPER	60.68

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	
2.0 Number of Storeys	2	
3.0 Date Built	2026	
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				
	Ground floor:	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	1st Storey:	17.88 m	39.63 m²	2.46 m
		17.88 m	39.63 m²	2.76 m

8.0 Living Area	33.09	m²
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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	93.33	81.24	0.00	None	12.09	Calculate Wall Area

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	45.93	0.00	None

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Metal GF	Plasterboard on timber frame	9.00	59.83
Metal FF	Plasterboard on timber frame	9.00	66.88

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	39.63	39.63	None	0.00	Calculate Wall Area	0.00

Description	Storey	Construction	Kappa	Area (m²)
Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	9.00	39.63

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	39.63

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1	+1	Plasterboard ceiling, carpeted chipboard floor	18.00	39.63

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 Window	Manufacturer BFR, BSI or CERTASS data	Half Glazed Door Window	Double Low-E Soft 0.1			0.63		0.70	1.20
			Double Low-E Soft 0.1			0.44			1.30
Patio Door	BFR, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.29			1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door Side Panel	Brickwork	North	2.15	
D02	Patio Door	Brickwork	South	3.80	
W01	Window	Brickwork	North	1.07	
W02	Window	Brickwork	North	2.17	
W03	Window	Brickwork	South	2.17	
W04	Window	Brickwork	East	0.72	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E10 Eaves (insulation at ceiling level)	Independently assessed	9.06	0.07	0.07	No
E12 Gable (insulation at ceiling level)	Independently assessed	8.82	0.05	0.05	No
E1 Steel lintel with perforated steel base plate	Independently assessed	8.16	0.07	0.07	No
E3 Sill	Independently assessed	5.33	0.02	0.02	No
E4 Jamb	Independently assessed	17.40	0.01	0.01	No
E5 Ground floor (normal)	Independently assessed	17.88	0.06	0.06	No
E6 Intermediate floor within a dwelling	Independently assessed	17.88	0.00	0.00	No
E16 Corner (normal)	Independently assessed	10.44	0.04	0.04	Yes
E18 Party wall between dwellings	Independently assessed	10.44	0.04	0.04	Yes
P1 Party wall - Ground floor	Independently assessed	8.82	0.07	0.07	No
P2 Party wall - Intermediate floor within a dwelling	Independently assessed	8.82	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	8.82	0.07	0.07	No

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	<input type="text" value="Yes"/>
Approved Installation	<input type="text" value="Yes"/>
Mechanical Ventilation data Type	<input type="text" value="Database"/>
Type	<input type="text" value="Mechanical extract ventilation - decentralised"/>
MV Reference Number	<input type="text" value="500755"/>
Duct Type	<input type="text" value="Rigid"/>
Wet Rooms	<input type="text" value="3"/>

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	<input type="text" value="0"/>
Number of open flues	<input type="text" value="0"/>
Number of chimneys/flues attached to closed fire	<input type="text" value="0"/>

Summary for Input Data

Number of flues attached to solid fuel boiler	<input type="text" value="0"/>
Number of flues attached to other heater	<input type="text" value="0"/>
Number of blocked chimneys	<input type="text" value="0"/>
Number of intermittent extract fans	<input type="text" value="0"/>
Number of passive vents	<input type="text" value="0"/>
Number of flueless gas fires	<input type="text" value="0"/>

21.0 Fixed Cooling System	<input type="text" value="No"/>
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22.0 Pressure Testing	<input type="text" value="Yes"/>
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Designed AP ₅₀	<input type="text" value="4.50"/>	m ³ /(h.m ²) @ 50 Pa
Test Method	<input type="text" value="Blower Door"/>	

22.0 Lighting	<input type="text" value="No"/>
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No Fixed Lighting	<input type="text" value="No"/>				
	Name	Efficacy	Power	Capacity	Count
	Pendant	75.00	10.00	750.00	6
	Downlight	75.00	10.00	750.00	9

24.0 Main Heating 1	<input type="text" value="Database"/>	
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Percentage of Heat	<input type="text" value="100.00"/>	%
Database Ref. No.	<input type="text" value="104416"/>	
Fuel Type	<input type="text" value="Electricity"/>	
Model Name	<input type="text" value="aroTHERM plus 5kW + AI"/>	
Manufacturer	<input type="text" value="Vaillant Group UK Ltd"/>	
Controls SAP Code	<input type="text" value="2207"/>	
Is MHS Pumped	<input type="text" value="Pump in heated space"/>	
Heating Pump Age	<input type="text" value="2013 or later"/>	
Heat Emitter	<input type="text" value="Radiators and Underfloor"/>	
Underfloor Heating	<input type="text" value="Yes - Pipes in thin screed"/>	
Flow Temperature	<input type="text" value="Enter value"/>	
Flow Temperature Value	<input type="text" value="45.00"/>	

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

28.1 Showers					
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	
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Summary for Input Data

29.0 Hot Water Cylinder

Cylinder Stat

Hot Water Cylinder

Cylinder In Heated Space

Yes

Independent Time Control

Yes

Insulation Type

Yes

Cylinder Volume

Measured Loss

Loss

200.00

L

Pipes insulation

1.20

kWh/day

Fully insulated primary pipework

31.0 Thermal Store

None

34.0 Small-scale Hydro

None

Jan

Feb

Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

Nov

Dec

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data



Plot Reference	M3.11	Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	M3.11
Plot Address	M3.11	SAP Version	10.2

SAP Rating	85 B	DER	3.54	TER	10.13
Environmental	97 A	% DER < TER			65.05
CO ₂ Emissions (t/year)	0.32	DFEE	31.71	TFEE	33.91
Compliance Check	See BREL	% DFEE < TFEE			6.50
% DPER < TPER	30.05	DPER	36.99	TPER	52.88

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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

Orientation	North
Property Tenure	1
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	House, Semi-Detached
2.0 Number of Storeys	2
3.0 Date Built	2026
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation
Thermal Mass	0.00 kJ/m ² K
7.0 Electricity Tariff	Standard
Smart electricity meter fitted	Yes
Smart gas meter fitted	Yes

7.0 Measurements	Ground floor:	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	1st Storey:	19.72 m	48.48 m ²	2.46 m
		19.72 m	48.48 m ²	2.76 m

8.0 Living Area	27.56 m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	102.94	89.76	0.00	None	13.18	Calculate Wall Area

9.1 Party Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
	Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	48.86	0.00	None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Metal GF	Plasterboard on timber frame	9.00	85.09
	Metal FF	Plasterboard on timber frame	9.00	103.64

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
	Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	48.48	48.48	None	0.00	Calculate Wall Area	0.00

10.2 Internal Ceilings	Description	Storey	Construction	Kappa	Area (m ²)
	Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	9.00	48.48

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	48.48

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1	+1	Plasterboard ceiling, carpeted chipboard floor	18.00	48.48

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				0.63			1.00
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.29			1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door	Brickwork	North	2.16	
D02	Patio Door	Brickwork	South	5.23	
W01	Window	Brickwork	North	1.07	
W02	Window	Brickwork	North	0.72	
W03	Window	Brickwork	North	1.54	
W04	Window	Brickwork	South	1.22	
W05	Window	Brickwork	South	1.22	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E10 Eaves (insulation at ceiling level)	Independently assessed	10.36	0.07	0.07	No
E12 Gable (insulation at ceiling level)	Independently assessed	9.36	0.05	0.05	No
E1 Steel lintel with perforated steel base plate	Independently assessed	8.30	0.07	0.07	No
E3 Sill	Independently assessed	4.78	0.02	0.02	No
E4 Jamb	Independently assessed	20.40	0.01	0.01	No
E5 Ground floor (normal)	Independently assessed	19.72	0.06	0.06	No
E6 Intermediate floor within a dwelling	Independently assessed	19.72	0.00	0.00	No
E16 Corner (normal)	Independently assessed	10.44	0.04	0.04	No
E18 Party wall between dwellings	Independently assessed	10.44	0.04	0.04	No
P1 Party wall - Ground floor	Independently assessed	9.36	0.07	0.07	No
P2 Party wall - Intermediate floor within a dwelling	Independently assessed	9.36	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	9.36	0.07	0.07	No

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	<input type="text" value="Yes"/>
Approved Installation	<input type="text" value="No"/>
Mechanical Ventilation data Type	<input type="text" value="Database"/>
Type	<input type="text" value="Mechanical extract ventilation - decentralised"/>
MV Reference Number	<input type="text" value="500755"/>
Duct Type	<input type="text" value="Rigid"/>
Wet Rooms	<input type="text" value="3"/>

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	<input type="text" value="0"/>
Number of open flues	<input type="text" value="0"/>
Number of chimneys/flues attached to closed fire	<input type="text" value="0"/>

Summary for Input Data

Number of flues attached to solid fuel boiler	<input type="text" value="0"/>
Number of flues attached to other heater	<input type="text" value="0"/>
Number of blocked chimneys	<input type="text" value="0"/>
Number of intermittent extract fans	<input type="text" value="0"/>
Number of passive vents	<input type="text" value="0"/>
Number of flueless gas fires	<input type="text" value="0"/>

21.0 Fixed Cooling System	<input type="text" value="No"/>
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22.0 Pressure Testing	<input type="text" value="Yes"/>
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Designed AP ₅₀	<input type="text" value="4.50"/>	m ³ /(h.m ²) @ 50 Pa
Test Method	<input type="text" value="Blower Door"/>	

22.0 Lighting	<input type="text" value="No"/>
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No Fixed Lighting	<input type="text" value="No"/>				
	Name	Efficacy	Power	Capacity	Count
	Pendant	75.00	10.00	750.00	11
	Downlight	75.00	10.00	750.00	11

24.0 Main Heating 1	<input type="text" value="Database"/>	
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Percentage of Heat	<input type="text" value="100.00"/>	%
Database Ref. No.	<input type="text" value="104416"/>	
Fuel Type	<input type="text" value="Electricity"/>	
Model Name	<input type="text" value="aroTHERM plus 5kW + AI"/>	
Manufacturer	<input type="text" value="Vaillant Group UK Ltd"/>	
Controls SAP Code	<input type="text" value="2207"/>	
Is MHS Pumped	<input type="text" value="Pump in heated space"/>	
Heating Pump Age	<input type="text" value="2013 or later"/>	
Heat Emitter	<input type="text" value="Radiators and Underfloor"/>	
Underfloor Heating	<input type="text" value="Yes - Pipes in Concrete"/>	
Flow Temperature	<input type="text" value="Enter value"/>	
Flow Temperature Value	<input type="text" value="45.00"/>	

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

28.1 Showers					
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	
--	--

Summary for Input Data

29.0 Hot Water Cylinder

Cylinder Stat

Hot Water Cylinder

Cylinder In Heated Space

Yes

Independent Time Control

Yes

Insulation Type

Yes

Cylinder Volume

Measured Loss

Loss

200.00

L

Pipes insulation

1.20

kWh/day

Fully insulated primary pipework

31.0 Thermal Store

None

34.0 Small-scale Hydro

None

Jan

Feb

Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

Nov

Dec

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Plot Reference	M3.12	Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	M3.12
Plot Address	M3.12	SAP Version	10.2

SAP Rating	84 B	DER	3.58	TER	11.17
Environmental	97 A	% DER < TER			67.95
CO ₂ Emissions (t/year)	0.31	DFEE	34.68	TFEE	36.41
Compliance Check	See BREL	% DFEE < TFEE			4.76
% DPER < TPER	35.94	DPER	37.40	TPER	58.39

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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
2.0 Number of Storeys	3
3.0 Date Built	2026
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation
Thermal Mass	216.31 kJ/m ² K
7.0 Electricity Tariff	Standard
Smart electricity meter fitted	Yes
Smart gas meter fitted	Yes

7.0 Measurements	Ground floor:	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	1st Storey:	17.34 m	37.58 m ²	2.46 m
	2nd Storey:	15.97 m	25.20 m ²	2.76 m
				2.40 m

8.0 Living Area	17.57 m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	107.84	92.28	0.00	None	15.56	Enter Gross Area
	Timber Stud Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.18	9.00	15.42	15.42	0.00	None	0.00	Enter Gross Area
	Dormer Cheek	Timber Frame	Timber framed wall (one layer of plasterboard)	0.26	9.00	3.91	2.28	0.00	None	1.63	Enter Gross Area

9.1 Party Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
	Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	59.76	0.00	None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Metal GF	Plasterboard on timber frame	9.00	18.41
	Metal FF	Plasterboard on timber frame	9.00	88.43
	Metal SF	Plasterboard on timber frame	9.00	18.32
	Block Wall GF	Dense block, plasterboard on dabs	75.00	45.94

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
	Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	16.94	16.94	None	0.00	Enter Gross Area	0.00
	Dormer Roof	External Flat Roof	Plasterboard, insulated flat roof	0.19	9.00	1.92	1.92	None	0.00	Enter Gross Area	0.00

Summary for Input Data



Exposed Roof	External Plane	Plasterboard, insulated at ceiling level	0.12	9.00	12.38	12.38	None	0.00	Enter Gross Area	0.00
Sloping Roof	External Slope	Plasterboard, insulated slope	0.16	9.00	8.97	8.02	None	0.00	Enter Gross Area	0.95

10.2 Internal Ceilings

Description	Storey	Construction	Kappa	Area (m²)
Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	9.00	37.58
Internal Ceiling 2	+2	Plasterboard ceiling, carpeted chipboard floor	9.00	25.20

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	37.58

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1	+1	Plasterboard ceiling, carpeted chipboard floor	18.00	37.58
Internal Floor 2	+2	Plasterboard ceiling, carpeted chipboard floor	18.00	25.20

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	1.00
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.29			1.40
Roof Window	BFRC, BSI or CERTASS data	Roof Window	Double Low-E Soft 0.1			0.63			1.30
Storage Door	Manufacturer	Solid Door				0.00			2.00

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door	Brickwork	North	2.14	
D02	Patio Door	Brickwork	South	5.22	
W01,4,5	Window	Brickwork	North	4.14	
W08	Window	Dormer Cheek	North	1.63	
W06	Window	Brickwork	South	1.90	
W09	Roof Window	Sloping Roof	South	0.95	45
W02,3,7	Window	Brickwork	East	2.16	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E12 Gable (insulation at ceiling level)	Independently assessed	6.95	0.05	0.05	No
E1 Steel lintel with perforated steel base plate	Independently assessed	10.21	0.07	0.07	No
E3 Sill	Independently assessed	7.72	0.02	0.02	No
E4 Jamb	Independently assessed	25.20	0.01	0.01	No
E5 Ground floor (normal)	Independently assessed	17.34	0.06	0.06	No
E6 Intermediate floor within a dwelling	Independently assessed	33.31	0.00	0.00	No
E16 Corner (normal)	Independently assessed	14.26	0.04	0.04	No
E17 Corner (inverted – internal area greater than external area)	Table K1 - Default	0.00	0.00	-0.05	No
E17 Corner (inverted – internal area greater than external area)	Table K1 - Default	3.30	0.00	0.00	No
E16 Corner (normal)	Independently assessed	4.41	0.04	0.04	No
R9 Roof to wall (flat ceiling)	Independently assessed	4.18	0.06	0.06	No
R7 Flat ceiling (inverted)	Independently assessed	6.71	0.03	0.03	No
R6 Flat ceiling	Independently assessed	8.77	0.02	0.02	No
R8 Roof to wall (rafter)	Independently assessed	8.77	0.05	0.05	No
R1 Head of roof window	Independently assessed	1.36	0.12	0.12	No
R2 Sill of roof window	Independently assessed	1.36	0.11	0.11	No
R3 Jamb of roof window	Independently assessed	2.40	0.04	0.04	No
E13 Gable (insulation at rafter level)	Independently assessed	6.67	0.09	0.09	No
E11 Eaves (insulation at rafter level)	Independently assessed	8.77	0.04	0.04	No
P1 Party wall - Ground floor	Independently assessed	8.57	0.07	0.07	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	14.05	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	3.86	0.07	0.07	No
P5 Party wall - Roof (insulation at rafter level)	Independently assessed	6.70	0.04	0.04	No
R1 Head of roof window	Independently assessed	0.77	0.12	0.12	No
R2 Sill of roof window	Independently assessed	0.77	0.11	0.11	No
R3 Jamb of roof window	Independently assessed	2.48	0.04	0.04	No

Y-value W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Summary for Input Data

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

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
Test Method	Blower Door

22.0 Lighting

No Fixed Lighting	No			
	Name	Efficacy	Power	Capacity
	Pendant	75.00	10.00	750.00
	Downlight	75.00	10.00	750.00
				Count
				9
				9

24.0 Main Heating 1

Database	
Percentage of Heat	100.00 %
Database Ref. No.	104416
Fuel Type	Electricity
In Winter	238.41
In Summer	264.23
Model Name	aroTHERM plus 5kW + AI
Manufacturer	Vaillant Group UK Ltd
System Type	Heat Pump
Controls SAP Code	2207
Controls description	Time and temperature zone control by arrangement
Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators

Summary for Input Data

Flow Temperature

Flow Temperature Value

25.0 Main Heating 2

26.0 Heat Networks

27.0 Secondary Heating

28.0 Water Heating

Water Heating

SAP Code

Flue Gas Heat Recovery System

Waste Water Heat Recovery Instantaneous System 1

Waste Water Heat Recovery Instantaneous System 2

Waste Water Heat Recovery Storage System

Solar Panel

Water use <= 125 litres/person/day

Cold Water Source

Bath Count

Immersion Only Heating Hot Water

28.1 Showers

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

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Cylinder Stat

Cylinder In Heated Space

Independent Time Control

Insulation Type

Cylinder Volume L

Loss kWh/day

Pipes insulation

31.0 Thermal Store

34.0 Small-scale Hydro

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

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Plot Reference	M3.13	Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	M3.13
Plot Address	M3.13	SAP Version	10.2

SAP Rating	82 B	DER	4.31	TER	12.19
Environmental	96 A	% DER < TER			64.64
CO ₂ Emissions (t/year)	0.36	DFEE	40.21	TFEE	43.55
Compliance Check	See BREL	% DFEE < TFEE			7.66
% DPER < TPER	29.66	DPER	44.86	TPER	63.78

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	
2.0 Number of Storeys	2	
3.0 Date Built	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	156.47	kJ/m²

7.0 Electricity Tariff	Standard
Smart electricity meter fitted	Yes
Smart gas meter fitted	Yes

7.0 Measurements	Ground floor: 1st Storey:	Heat Loss Perimeter 28.43 m 28.43 m	Internal Floor Area 47.30 m² 47.30 m²	Average Storey Height 2.46 m 2.76 m
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8.0 Living Area	27.43	m²
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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
	External Brick Faced Wall	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	104.29	91.61	0.00	None	12.68	Enter Gross Area
	Ext Weatherboard Wall	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	44.17	39.09	0.00	None	5.08	Enter Gross Area

9.2 Internal Walls	Description	Construction	Kappa (kJ/m²K)	Area (m²)
	Internal Partition	Plasterboard on timber frame	9.00	189.91

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
	Main Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	47.30	47.30	None	0.00	Enter Gross Area	0.00

10.2 Internal Ceilings	Description	Storey	Construction	Kappa	Area (m²)
	Internal Ceiling	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	9.00	47.30

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	47.30

11.2 Internal Floors

Summary for Input Data

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor	+1	Plasterboard ceiling, carpeted chipboard floor	18.00	47.30

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				0.63			1.00
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05			0.29			1.40
Front Solid Door	Manufacturer	Solid Door				0.00			1.00

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Door	Front Door	External Brick Faced Wall	North	2.15	
Side Elevation	Patio Door	External Brick Faced Wall	West	3.33	
Front Elevation	Window	External Brick Faced Wall	North	3.00	
Side Elevation	Window	External Brick Faced Wall	West	2.30	
Side Elevation	Window	External Brick Faced Wall	East	1.90	
Front Elevation	Window	Ext Weatherboard Wall	North	3.17	
Side Elevation	Window	Ext Weatherboard Wall	East	1.90	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	13.28	0.07	0.07 Hi Therm-KeystoneLintels	No
E3 Sill	Independently assessed	10.70	0.02	0.02 Knauf Insulation	No
E4 Jamb	Independently assessed	32.20	0.01	0.01 Knauf Insulation	No
E5 Ground floor (normal)	Independently assessed	28.43	0.06	0.06 Bison Precast	No
E6 Intermediate floor within a dwelling	Independently assessed	28.43	0.00	0.00 Knauf Insulation	No
E16 Corner (normal)	Independently assessed	20.88	0.04	0.04 Knauf Insulation	No
E10 Eaves (insulation at ceiling level)	Independently assessed	17.82	0.07	0.07 Knauf Insulation	No
E12 Gable (insulation at ceiling level)	Independently assessed	10.65	0.05	0.05 Knauf Insulation	No

Y-value W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	<input type="text" value="Yes"/>
Approved Installation	<input type="text" value="No"/>
Mechanical Ventilation data Type	<input type="text" value="Database"/>
Type	<input type="text" value="Mechanical extract ventilation - decentralised"/>
MV Reference Number	<input type="text" value="500755"/>
Duct Type	<input type="text" value="Rigid"/>
Wet Rooms	<input type="text" value="3"/>

19.1 Mechanical extract ventilation - Decentralised

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

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	<input type="text" value="0"/>
Number of open flues	<input type="text" value="0"/>
Number of chimneys/flues attached to closed fire	<input type="text" value="0"/>
Number of flues attached to solid fuel boiler	<input type="text" value="0"/>
Number of flues attached to other heater	<input type="text" value="0"/>
Number of blocked chimneys	<input type="text" value="0"/>

Summary for Input Data

Number of intermittent extract fans	<input type="text" value="0"/>
Number of passive vents	<input type="text" value="0"/>
Number of flueless gas fires	<input type="text" value="0"/>

21.0 Fixed Cooling System

22.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

22.0 Lighting
No Fixed Lighting

Name	Efficacy	Power	Capacity	Count
Pendant	75.00	10.00	750.00	8
Downlights	75.00	10.00	750.00	4
Batten Holder	75.00	10.00	750.00	1
Splash Lights	75.00	10.00	750.00	1

24.0 Main Heating 1

Description

Percentage of Heat %

Database Ref. No.

Fuel Type

In Winter

In Summer

Model Name

Manufacturer

System Type

Controls SAP Code

Controls description

Is MHS Pumped

Heating Pump Age

Heat Emitter

Flow Temperature

Flow Temperature Value

25.0 Main Heating 2

26.0 Heat Networks

27.0 Secondary Heating

28.0 Water Heating

Water Heating

SAP Code

Flue Gas Heat Recovery System

Waste Water Heat Recovery Instantaneous System 1

Waste Water Heat Recovery Instantaneous System 2

Waste Water Heat Recovery Storage System

Solar Panel

Water use <= 125 litres/person/day

Cold Water Source

Bath Count

Immersion Only Heating Hot Water

28.1 Showers		Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Description						

Summary for Input Data



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
Loss	1.20
Pipes insulation	Fully insulated primary pipework

L kWh/day

31.0 Thermal Store

None

34.0 Small-scale Hydro

None

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Plot Reference	M4.12	Issued on Date	24/03/2026
Assessment Reference	001	Plot Type Ref	M4.12
Plot Address	M4.12	SAP Version	10.2

SAP Rating	84 B	DER	3.38	TER	10.28
Environmental	97 A	% DER < TER			67.12
CO ₂ Emissions (t/year)	0.39	DFEE	34.44	TFEE	36.44
Compliance Check	See BREL	% DFEE < TFEE			5.50
% DPER < TPER	34.52	DPER	35.21	TPER	53.77

Assessor Details	Mr. Matthew Fitzpatrick	Assessor ID	7601-0001
Client	SB-03, Stonebond Properties (Guildford)		

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	
2.0 Number of Storeys	3	
3.0 Date Built	2026	
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
<hr/>		
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements	Ground floor:	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	1st Storey:	19.82 m	48.46 m ²	2.46 m
	2nd Storey:	19.82 m	48.46 m ²	2.76 m
		18.73 m	26.75 m ²	2.40 m

8.0 Living Area	38.46	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	Brickwork	Cavity Wall	Cavity wall : plasterboard on dabs, AAC block, filled cavity, any outside structure	0.18	60.00	119.57	103.23	0.00	None	16.34	Enter Gross Area
	Timber Stud Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.18	9.00	25.30	25.30	0.00	None	0.00	Enter Gross Area
	Dormer Cheek	Timber Frame	Timber framed wall (one layer of plasterboard)	0.26	9.00	6.59	5.36	0.00	None	1.23	Enter Gross Area

9.1 Party Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
	Party Wall 1	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	58.74	0.00	None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Metal GF	Plasterboard on timber frame	9.00	61.87
	Metal FF	Plasterboard on timber frame	9.00	105.38
	Metal SF	Plasterboard on timber frame	9.00	16.64

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
	Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.08	9.00	21.11	21.11	None	0.00	Enter Gross Area	0.00
	Dormer Roof	External Flat Roof	Plasterboard, insulated flat roof	0.19	9.00	2.73	2.73	None	0.00	Enter Gross Area	0.00

Summary for Input Data

Exposed Roof	External Plane	Plasterboard, insulated at ceiling level	0.12	9.00	21.71	21.71	None	0.00	Enter Gross Area	0.00
Sloping Roof	External Slope	Plasterboard, insulated slope	0.16	9.00	4.11	4.11	None	0.00	Enter Gross Area	0.00

10.2 Internal Ceilings

Description	Storey	Construction	Kappa	Area (m²)
Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	9.00	48.46
Internal Ceiling 2	+1	Plasterboard ceiling, carpeted chipboard floor	9.00	26.75

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	48.46

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1	+1	Plasterboard ceiling, carpeted chipboard floor	18.00	48.46
Internal Floor 2	+2	Plasterboard ceiling, carpeted chipboard floor	18.00	26.75

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	1.00
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.44			1.30
Patio Door	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1			0.29			1.40
Rooflight	BFRC, BSI or CERTASS data	Roof Light	Double Low-E Hard 0.15			0.63			1.20
Storage Door	Manufacturer	Solid Door				0.00			2.00

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
D01	Front Door	Brickwork	North	2.15	
D02	Patio Door	Brickwork	South	3.80	
W01,2,5,6	Window	Brickwork	North	4.25	
W07	Window	Dormer Cheek	North	1.23	
W03,7,8	Window	Brickwork	South	3.84	
W04,9	Window	Brickwork	South	2.30	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E12 Gable (insulation at ceiling level)	Independently assessed	3.83	0.05	0.05	No
E1 Steel lintel with perforated steel base plate	Independently assessed	11.70	0.07	0.07	No
E3 Sill	Independently assessed	8.87	0.02	0.02	No
E4 Jamb	Independently assessed	29.40	0.01	0.01	No
E5 Ground floor (normal)	Independently assessed	19.82	0.06	0.06	No
E6 Intermediate floor within a dwelling	Independently assessed	38.54	0.00	0.00	No
E16 Corner (normal)	Independently assessed	15.23	0.04	0.04	No
E17 Corner (inverted – internal area greater than external area)	Independently assessed	0.00	-0.09	-0.09	No
E16 Corner (normal)	Table K1 - Default	2.42	0.18	0.18	Timber Wall
E17 Corner (inverted – internal area greater than external area)	Table K1 - Default	5.60	0.00	0.00	TS Wall
E16 Corner (normal)	Independently assessed	3.93	0.04	0.04	Stormking Data
R9 Roof to wall (flat ceiling)	Independently assessed	5.32	0.06	0.06	No
R7 Flat ceiling (inverted)	Independently assessed	8.34	0.03	0.03	No
R6 Flat ceiling	Independently assessed	11.02	0.02	0.02	No
R8 Roof to wall (rafter)	Independently assessed	4.12	0.05	0.05	No
R1 Head of roof window	Independently assessed	1.02	0.09	0.09	Stormking Data
R2 Sill of roof window	Independently assessed	1.02	0.09	0.09	Stormking Data
R3 Jamb of roof window	Independently assessed	2.40	0.09	0.09	Stormking Data
E13 Gable (insulation at rafter level)	Independently assessed	6.88	0.09	0.09	No
E11 Eaves (insulation at rafter level)	Independently assessed	11.02	0.04	0.04	No
P1 Party wall - Ground floor	Independently assessed	8.79	0.07	0.07	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	13.09	0.00	0.00	No
P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	3.83	0.07	0.07	No
P5 Party wall - Roof (insulation at rafter level)	Independently assessed	6.79	0.04	0.04	No
E18 Party wall between dwellings	Independently assessed	10.96	0.04	0.04	No
E18 Party wall between dwellings	Table K1 - Default	4.50	0.24	0.24	Timber Loft Wall

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

Approved Installation

Summary for Input Data

Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500755
Duct Type	Rigid
Wet Rooms	3

19.1 Mechanical extract ventilation - Decentralised

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

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	3.50	m ³ /(h.m ²) @ 50 Pa
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	8

24.0 Main Heating 1

1.0 Main Heating 1	Database	
Percentage of Heat	100.00	%
Database Ref. No.	104436	
Fuel Type	Electricity	
Model Name	aroTHERM plus 7kW + AI	
Manufacturer	Vaillant Group UK Ltd	
Controls SAP Code	2207	
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

Summary for Input Data

27.0 Secondary Heating

28.0 Water Heating

Water Heating

SAP Code

Flue Gas Heat Recovery System

Waste Water Heat Recovery Instantaneous System 1

Waste Water Heat Recovery Instantaneous System 2

Waste Water Heat Recovery Storage System

Solar Panel

Water use <= 125 litres/person/day

Cold Water Source

Bath Count

Immersion Only Heating Hot Water

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
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

Cylinder In Heated Space

Independent Time Control

Insulation Type

Cylinder Volume L

Loss kWh/day

Pipes insulation

31.0 Thermal Store

34.0 Small-scale Hydro

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

Lower cost measures

None

Further measures to achieve even higher standards

None