



Energy Statement

Land At Green Lane, Ashwell, Herts, SG7 5LW

Osprey Homes

Report No: PA-ES-BW-GL-24-01

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1. ASSESSMENT INFORMATION

Project Name	Green Lane, Ashwell
Project Address	Land At Green Lane, Ashwell, Herts, SG7 5LW
Client	Osprey Homes
Architect	Ian Barnett
Architect's Address	59 Ditchfield Road, Hoddeson, Herts, EN11 9HS
Project Description	Erection of 7 homes, with associated access, landscaping and parking.

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03			

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2. EXECUTIVE SUMMARY

This document has been prepared by Abbey Consultants (Southern) Ltd, a specialist environmental and energy consultancy on behalf of Osprey Homes, to support a planning application for the provision of 7no. new residential dwellings at Land At Green Lane, Ashwell, Herts, SG7 5LW.

The proposed strategy has been based around the relevant adopted planning objectives of North Hertfordshire District Council's Local Plan (adopted November 2022) with the aim of achieving compliance with the current Building Regulations Part L 2021.

This report considers energy and sustainability with an assessment of the predicted CO₂ demand for the proposed development. In the formulation of this strategy, much consideration has been given to minimising the carbon emissions of the proposed development, and to ensure the development is constructed to rigorous sustainability standards.

In keeping with the requirements of North Hertfordshire District Council, and Building Regulations Part L 2021, this report comprises of the following:

- A Building Regulation baseline energy assessment for the proposed development.
- Will minimise energy demand and subsequent CO₂ emissions through the specification of low U-values, low air permeability and low thermal bridging to reduce heat loss.
- A calculation of CO₂ savings that are to be achieved as a result of energy efficiency measures.
- An appraisal of the potential options for on-site renewables or low and zero carbon technologies.
- An outline specification of the proposed water efficiency measures to limit the internal water usage of each dwelling to less than 110 litres per person per day.

The development will reduce regulated CO₂ emissions by integrating a range of passive and active design and energy efficiency measures throughout the building. These measures include improving building fabric standards beyond the requirements of Part L of the Building Regulations. These measures enable the proposed scheme to go beyond and Target Fabric Energy Efficiency (TFEE) minimum standards via energy efficiency measures alone. However, these measures alone are not enough to achieve an improvement over the Target Emission Rates (TER). Therefore, additional measures are required.

Following the fabric and energy efficiency improvements, the 'Be Green' stage of the energy hierarchy details that individual air source heat pumps will be installed to each home. This will provide a low carbon energy solution to meet the space heating and hot water demands of the dwellings.

All of the measures detailed herein combine to see a saving of 5.84 tonnes of CO₂ per year compared to the Building Regulations Part L 2021 baseline. This represents 71% CO₂ emissions improvement beyond Part L 2021 requirements. This is in line with the adopted planning policy requirements of North Hertfordshire District Council.

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

Table 1: Energy Strategy Carbon Emissions Summary

Stage of Energy Hierarchy	Regulated CO ₂ Emissions (tonnes/year)
Total Baseline	8.24
Total After 'Be Lean'	7.95
Total After 'Be Green'	2.40
Total Saving	5.84
Total Improvement	71%

Finally, the fabric specification detailed within this energy strategy ensures that the average Dwelling Fabric Energy Efficiency improves upon the average Target Fabric Energy Efficiency (as defined by Building Regulations Part L1 2021) by 1%. This is detailed within the table below.

Table 2: Residential FEE Performance

Element	Target Fabric Energy Efficiency (TFEE) kWh/m ² /year	Dwelling Fabric Energy Efficiency (DFEE) kWh/m ² /year	Improvement (%)
Residential Total	40.61	40.01	1%

Energy and Sustainability Summary

The strategy achieves and meets the following requirements:

- Maximises the energy efficiency performance of the building fabric, in accordance with the energy hierarchy.
- The fabric energy efficiency (DFEE) achieves a 1% reduction over the minimum standards defined by Building Regulations Part L1 2021 (TFEE).
- Minimises carbon dioxide emissions at the 'Be Green' stage of the energy hierarchy by utilising air source heat pump technology to provide space heating and hot water to the dwellings.
- Reduces a total estimated 5.84 tonnes of CO₂ compared to the Part L 2021 baseline. This equates to a 71% saving.
- Details a specification of water efficiency measures which will limit the internal water consumption of the dwellings to no more than 110 litres/person/day.
- The proposals detailed herein include sustainable construction techniques and standards in line with National and North Hertfordshire District Council's planning policy requirements.
- Complies with all the main compliance criteria required by Part L 2021 of the Building Regulations.

3. INTRODUCTION

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

The following report establishes a baseline assessment of the energy demands and associated CO₂ emissions for the development. The energy hierarchy approach of Be Lean, Be Clean and Be Green is then followed to ensure the maximum viable reductions in energy and regulated CO₂ emissions is achieved.

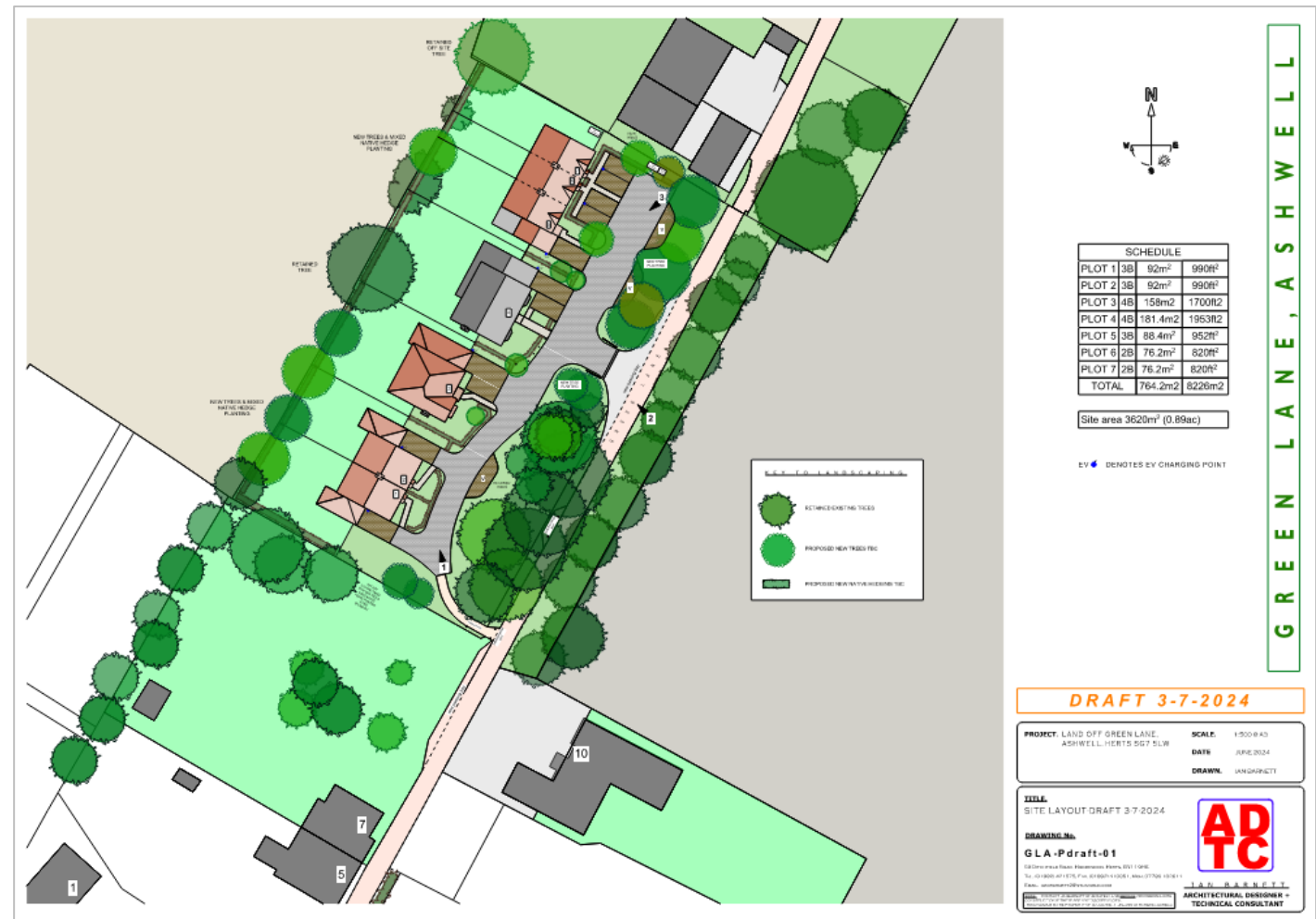
The proposed development is described as:

Erection of 7 homes, with associated access, landscaping and parking.

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

Figure 1 presents the proposed site layout.

Figure 1: Site Plan



4. PLANNING POLICY

4.1 NATIONAL PLANNING POLICY FRAMEWORK (NPPF) 2023

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

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

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

Paragraph 159. New development should be planned for in ways that:

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

Paragraph 160. To help increase the use and supply of renewable and low carbon energy and heat, plans should:

- a. provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);
- 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 161. Local planning authorities should support community-led initiatives for renewable and low carbon energy, including developments outside areas identified in local plans or other strategic policies that are being taken forward through neighbourhood planning.

Paragraph 162. In determining planning applications, local planning authorities should expect new development to:

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

Paragraph 163. When determining planning applications for renewable and low carbon development, local planning authorities should:

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

Paragraph 164. In determining planning applications, local planning authorities should 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.

4.2 LOCAL POLICY

North Hertfordshire District Council
Local Plan 2011 - 2031
Adopted November 2022

Policy SP11: Natural Resources and Sustainability

This plan seeks to meet the challenges of climate change and flooding. We will:

- a. Support proposals for renewable and low carbon energy development in appropriate locations;
- b. Take a risk based approach to development and flood risk, directing development to areas at lowest risk in accordance with the NPPF and ensuring the provision of Sustainable Drainage Systems (SuDS) and appropriate measures;
- c. Support the principles of the Water Framework Directive and seek to protect, enhance and manage the water environment; and
- d. Give consideration to the potential or actual impact of land contamination and support proposals that involve the remediation of contaminated land.

Policy D1: Sustainable Design

Planning permission will be granted where development proposals:

- a. Respond positively to the site's local context;
- b. Take all reasonable opportunities, consistent with the nature and scale of the scheme, to:
 - i. create or enhance public realm;
 - ii. optimise the potential of the site by incorporating Sustainable Drainage Systems (SuDS);
 - iii. reduce energy consumption and waste;
 - iv. retain existing vegetation and propose appropriate new planting;
 - v. maximise accessibility, legibility and connectivity;
 - vi. future proof for changes in technology and lifestyle;
 - vii. design-out opportunities for crime and anti-social behaviour; and
 - viii. minimise the visual impact of street furniture and parking provision;
- c. Have regard to the Design SPD and any other relevant guidance; and

- d. For residential schemes, meet or exceed the nationally described space and water efficiency standards.

North Hertfordshire District Council **Draft Sustainability Supplementary Planning Document (SPD)**

The draft Sustainability SPD provides information regarding NHDCs sustainability expectations for development in North Herts and offers good practice guidance to residents and developers when developing proposals and submitting planning applications.

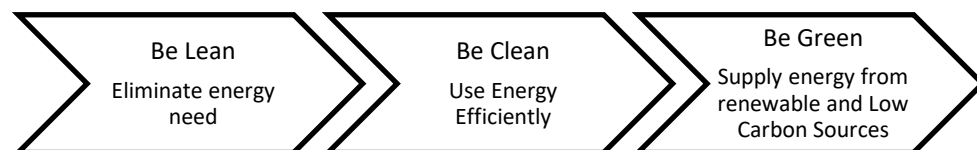
The SPD has been prepared in support of policy SP1 (Sustainable Development in North Hertfordshire), policy D1 (Sustainable Design) and other relevant policies in the adopted Local Plan.

The consultation for the draft Sustainability SPD took place between 4th January 2024 and 16th February 2024. Comments received will be considered for the final version.

Whilst the draft Sustainability SPD has been taken into account during the formation of this energy strategy, the document does not carry any weight in the planning decision making as it is yet to be adopted.

5. ENERGY STRATEGY APPROACH

The proposed energy strategy follows the established and widely accepted Energy Hierarchy of eliminate energy need (Be Lean), Use energy efficiently (Be Clean) and supply energy from renewable and low carbon sources (Be Green) to enable the maximum viable reductions in regulated and total 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).
- Incorporate a number of construction practices and measures to ensure sustainability will be incorporated including waste practices, environmental pollution management and material sourcing.

5.1 ENERGY AND CARBON ASSESSMENT METHODOLOGY

Elmhurst Energy software, which uses the Standard Assessment Procedure (SAP) 10.2 methodology to assess compliance with Part L1 2021, has been used to evaluate an initial CO₂ performance of 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.

6. 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.

6.1 INITIAL SAP CALCULATIONS

The baseline CO₂ emissions for the proposed development are 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 all three 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 L1 2021. The representative dwellings presented in the following table were used to carry out the SAP assessment.

Table 3: Sample SAP Dwellings

Sample SAP Type Reference	No. of Units
Plot 1	2
Plot 3	1
Plot 4	1
Plot 5	1
Plot 7	2
Total	7

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

6.2 TOTAL BASELINE

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

Table 4: Total Baseline CO₂ emissions

Stage of Energy Hierarchy	Regulated CO ₂ Emissions (tonnes/year)
Part L1 2021 Baseline	8.24

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



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

A range of measures to reduce CO₂ emissions and increase resilience to climate change are proposed in the building design including good building fabric standards as well as energy efficient M&E systems and lighting.

7.1 PASSIVE DESIGN

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

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

Natural ventilation is considered the most suitable means of ventilation for this development. This reduces energy consumption as it does not require electricity to operate unlike the alternative mechanical means of ventilation. Kitchens, utility rooms, bathrooms and toilets will all have standard intermittent extract fans in order to achieve the minimum extract rates in line with Building Regulations Approved Document F.

The ventilation strategy will be reviewed again and developed as the design progresses to ensure compliance with all the relevant regulations and standards. Should certain elevations be affected by noise issues restricting the opening of windows, enhanced mechanical ventilation will be introduced to reduce the risk of overheating. It is assumed, in this scenario, that all windows can still be opened (albeit intermittently) for purge ventilation.

The proposed glazed areas have been designed to maximise daylight and optimise solar gains. This is enhanced by the linear southeast facing front elevations of the dwellings. The

glazing specification has been reviewed to ensure that they provide a balance between solar control and solar gain.

7.2 BUILDING FABRIC

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

Table 5: Proposed Fabric Specification

Element	Part L1 2021 Minimum Fabric Requirements	Proposed Specification
Ground Floor	0.18 W/m ² K	0.12 W/m ² K
External Wall	0.26 W/m ² K	0.20 W/m ² K
Cold Roof	0.16 W/m ² K	0.09 W/m ² K
Flat Roof	0.16 W/m ² K	0.12 – 0.15 W/m ² K
Windows	1.60 W/m ² K	U = 1.40W/m ² K G = 0.45 BFRC Certificate
Doors	1.60 W/m ² K	1.20 W/m ² K
Air Permeability	8.0m ³ /h/m ² @50Pa	4.50m ³ /h/m ² @50Pa

Recognised Construction Details for all wall junctions will be specified to minimise the effects of non-repeating thermal bridging and reduce heat loss further. By specifying and ensuring that Recognised Construction Details are designed into the build, CO₂ emissions can be greatly reduced. Junctions that are not covered by Recognised Construction Details may need to be independently assessed.

7.3 ENERGY EFFICIENT SYSTEMS

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

7.4.1. HEATING AND HOT WATER

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

It is proposed that the dwellings will have their heating and hot water supplied through highly efficient individual air source heat pumps. However, as this technology is considered a low and zero carbon technology, it can only be considered at the 'Be Green' stage of this energy hierarchy. Therefore, for the purpose of reporting the 'Be Lean' figures, gas combination boilers have been assumed at the 'Be Lean' stage. This is consistent with the heating that is assumed in the notional building which is used to calculate the TER.

7.4.2. VENTILATION

To further minimise heat loss through the building envelope, air leakage will be made a priority. The airtightness of the dwellings will be set to a level of $4.50\text{m}^3/\text{h}/\text{m}^2$ and will utilise natural ventilation supplemented by intermittent extract fans to kitchens, utility rooms, bathrooms and toilets.

7.4.3. COOLING

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

7.4.4. LIGHTING

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

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

7.4 RESIDENTIAL FABRIC ENERGY EFFICIENCY (FEE)

The Target Fabric Energy Efficiency rate is the minimum energy performance requirement, as stipulated by Building Regulations Part L1 2021, for all new 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 1%, as detailed in the table below.

Table 6: Residential FEE Performance

Element	Target Fabric Energy Efficiency (TFEE) kWh/m ² /year	Dwelling Fabric Energy Efficiency (DFEE) kWh/m ² /year	Improvement (%)
Residential Total	40.61	40.01	1%

7.5 TOTAL CO₂ SAVINGS: BE LEAN

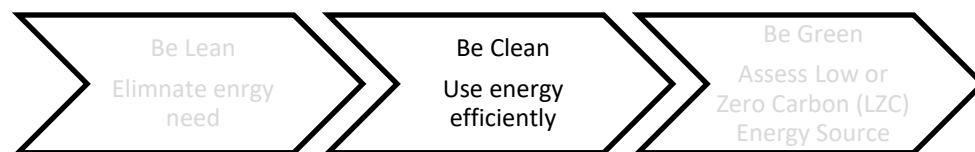
The total 'Be Lean' CO₂ emissions for the development are summarised below and compared against the baseline figure.

Table 7: Total 'Be Lean' CO₂ Emissions

Stage of Energy Hierarchy	Regulated CO ₂ Emissions (tonnes/year)
Part L1 2021 Baseline	8.24
Total After 'Be Lean'	7.95

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

8. SUPPLY ENERGY EFFICIENTLY (BE CLEAN)



Combined Heat and Power (CHP)

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

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

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

There are many benefits of decentralised heat generation and Combined Heat and Power (CHP) in terms of cost and CO₂ emissions savings. However, technology such as this is more significant for larger developments, ideally complimented with some non-residential use of heat and electricity. The proposed development size of 7 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.

For the reasons stated above, CHP is not considered viable for this scheme.

9. RENEWABLES OR LZC TECHNOLOGY (BE GREEN)



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

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

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

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

9.1 AIR SOURCE HEAT PUMPS (ASHP)

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

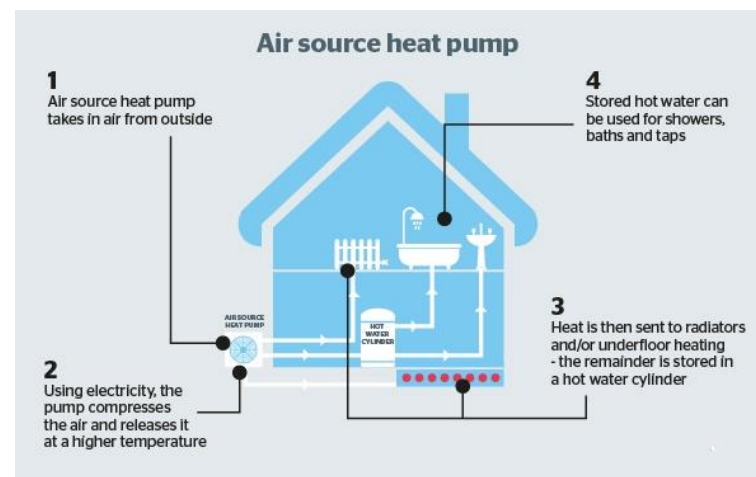
The technology is similar to a refrigerator/freezer or air conditioning unit. The different effect is due to the physical location of the different system components. Just as the pipes on the back of a refrigerator become warm as the interior cools, so an ASHP warms the inside of a building whilst cooling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

The main components of an ASHP are:

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

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

Figure 2: Example diagram of ASHP System



Some of the key advantages of ASHPs are listed below:

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

The use of individual Air Source Heat Pumps (ASHP) is proposed for this development to efficiently supply the 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.

The full design of this system will be further developed during the detailed design stage.

9.2 BUILDING SERVICES ENERGY EFFICIENCY MEASURES

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

Table 8: Summary of Building Services

Building Service Element	Specification
Heating:	Air Source Heat Pumps Daikin Altherma 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
Flue Gas Heat Recovery:	None
Cylinder: Heat Loss:	Hot water cylinder (capacity to be confirmed) 1.5 – 2.1 kWh/24 Hr
Ventilation:	Natural ventilation System 1 – Intermittent Extract Fans
Waste Water Heat Recovery:	None
Showers:	Flow rate – 8 litres per minute

10. TOTAL CO₂ SAVINGS: BE GREEN

The total 'Be Green' CO₂ emissions for the development are summarised below and compared against the previous stages of the energy hierarchy.

Table 9: Total 'Be Green' CO₂ Emissions

Stage of Energy Hierarchy	Regulated CO ₂ Emissions (tonnes/year)
Part L1 2021 Baseline	8.24
Total After 'Be Lean'	7.95
Total After 'Be Green'	2.40
Total Saving	5.84
Total Improvement	71%

11. SUSTAINABLE DESIGN AND CONSTRUCTION: MATERIALS AND WASTE

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

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

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

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

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

Construction Waste will be managed during both the construction and operational phases according to the following waste hierarchy:

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.
- Details a specification to limit the water consumption of the dwellings to 110 litres/person/day.

12. WATER SAVING MEASURES

Household water reduction measures will include the following where applicable:

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

The following specification (or similar) will be adopted on the development to ensure that the water efficiency of the dwelling will achieve a maximum internal consumption of 110 litres per person per day.

Table 10: 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 11: 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)					114.5
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)					109.2

13. CONCLUSIONS

The energy strategy detailed within this energy statement has followed the accepted Energy Hierarchy of 'Be Lean', 'Be Clean' and 'Be Green'. The energy strategy proposed for the development has been summarised below.

Table 12: Summary of Proposed Energy Strategy

Element	Strategy
Passive	Optimised design to enable controlled solar gain and improved direct and indirect natural lighting
Fabric	Building fabric U values have been enhanced over and above those detailed within Part L1 2021
Heating	Individual Air Source Heat Pumps Radiators and underfloor Heating
Hot Water	Supplied via Individual Air Source Heat Pumps
Cooling	None
Ventilation	Natural Ventilation – System 1 Intermittent Extract Fans Low design air permeability (DAP)
Lighting	Energy efficient LED Lighting where applicable

13.1 TOTAL CO₂ SAVINGS

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

Table 13: Energy Strategy Carbon Emissions Summary

Stage of Energy Hierarchy	Regulated CO ₂ Emissions (tonnes/year)
Total Baseline	8.24
Total After 'Be Lean'	7.95
Total After 'Be Green'	2.40
Total Saving	5.84
Total Improvement	71%

All of the measures detailed herein combine to see a saving of 5.84 tonnes of CO₂ per year compared to the Building Regulations Part L 2021 baseline. This represents 71% CO₂ emissions improvement beyond Part L 2021 requirements.

Finally, the fabric specification detailed within this energy strategy ensures that the average Dwelling Fabric Energy Efficiency improves upon the average Target Fabric Energy Efficiency (as defined by Building Regulations Part L1 2021) by 1%. This is detailed within the table below.

Table 14: Residential FEE Performance

Element	Target Fabric Energy Efficiency (TFEE) kWh/m ² /year	Dwelling Fabric Energy Efficiency (DFEE) kWh/m ² /year	Improvement (%)
Residential Total	40.61	40.01	1%

Energy and Sustainability Summary

The strategy achieves and meets the following requirements:

- Maximises the energy efficiency performance of the building fabric, in accordance with the energy hierarchy.
- The fabric energy efficiency (DFEE) achieves a 1% reduction over the minimum standards defined by Building Regulations Part L1 2021 (TFEE).
- Minimises carbon dioxide emissions at the 'Be Green' stage of the energy hierarchy by utilising air source heat pump technology to provide space heating and hot water to the dwellings.
- Reduces a total estimated 5.84 tonnes of CO₂ compared to the Part L 2021 baseline. This equates to a 71% saving.
- Details a specification of water efficiency measures which will limit the internal water consumption of the dwellings to no more than 110 litres/person/day.
- The proposals detailed herein include sustainable construction techniques and standards in line with National and North Hertfordshire District Council's planning policy requirements.
- Complies with all the main compliance criteria required by Part L 2021 of the Building Regulations.

14. APPENDICES

The following pages detail:

- Appendix A: Alternative Renewable Energy Options
- Appendix B: Sample SAP Summary Information Sheets (Be Lean)
- Appendix C: Sample SAP Summary Information Sheets (Be Green)

14.1 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 1kW can be installed to single house and large-scale turbines of 1-2MW 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 1kW micro wind system costs up to £3,000. A 2.5kW pole-mounted system costs between £9,900 and £19,000. A 6kW pole-mounted system costs between £21,000 and £30,000 (taken from the Energy Saving Trust, TBC by supplier)

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

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

Biomass Boilers

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

Biomass is not considered an economically viable option for this development based on the following reasons:

- 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.

Ground Source Heat Pumps (GSHP)

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

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

Discounted on the grounds of costs and available space.

Solar Thermal

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

Although Solar Thermal is possible on this scheme, it will not meet the level of CO₂ emissions improvement required by the Local Authority.

Photovoltaic Panels (PV)

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

14.2 APPENDIX B: SAMPLE SAP SUMMARY INFORMATION SHEETS (BE LEAN)

Summary for Input Data



Property Reference	Plot 1	Issued on Date	11/07/2024
Assessment Reference	001	Prop Type Ref	Plot 1
Property	Plot 1		

SAP Rating	85 B	DER	14.26	TER	11.38
Environmental	88 B	% DER < TER			-25.31
CO ₂ Emissions (t/year)	1.14	DFEE	36.90	TFEE	37.48
Compliance Check	See BREL	% DFEE < TFEE			1.54
% DPER < TPER	-33.40	DPER	79.27	TPER	59.42

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

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

Orientation	Southeast	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Semi-Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2024	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	N/A	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
Basement:	0.00 m	0.00 m ²	0.00 m
Ground floor:	19.06 m	45.29 m ²	2.50 m
1st Storey:	19.06 m	45.29 m ²	2.70 m
2nd Storey:	0.00 m	0.00 m ²	0.00 m
3rd Storey:	0.00 m	0.00 m ²	0.00 m
4th Storey:	0.00 m	0.00 m ²	0.00 m
5th Storey:	0.00 m	0.00 m ²	0.00 m
6th Storey:	0.00 m	0.00 m ²	0.00 m
7th Storey:	0.00 m	0.00 m ²	0.00 m

8.0 Living Area	16.08	m ²
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9.0 External Walls										
Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall 1	Cavity Wall	Cavity wall; dense plaster, lightweight aggregate block, filled cavity, any outside structure	0.20	140.00	99.13	82.36	0.00	None	16.77	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	46.87	0.00	None		

9.2 Internal Walls					
Description	Construction	Kappa (kJ/m ² K)	Area (m ²)		
Internal Wall 1	Plasterboard on timber frame	9.00	217.17		

10.0 External Roofs										
Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area	Shelter Code	Shelter Factor	Calculation Type	Openings

Summary for Input Data

Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	45.29	(m ²) 45.29	None	0.00	Enter Gross Area	0.00
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10.2 Internal Ceilings

Description	Storey	Construction	Area (m ²)
Internal Ceiling 1	+1	Plasterboard ceiling, carpeted chipboard floor	45.29

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	45.29

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	9.00	45.29

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 Doors	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1		Air Filled	0.63	Wood	0.70	1.20
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1		Air Filled	0.45	Wood	1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Doors	Front Doors	External Wall 1	South East	2.07	0
Front Windows	Windows	External Wall 1	South East	4.42	0
Rear Windows	Windows	External Wall 1	North West	9.26	0
Side Windows	Windows	External Wall 1	South West	1.02	0

14.0 Conservatory

None

15.0 Draught Proofing

100 %

16.0 Draught Lobby

No

17.0 Thermal Bridging

Calculate Bridges

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Non Gov Approved Schemes	12.15	0.05	0.05 HiTherm	No
E3 Sill	Non Gov Approved Schemes	11.17	0.02	0.02 RCD	No
E4 Jamb	Non Gov Approved Schemes	24.70	0.02	0.02 RCD	No
E5 Ground floor (normal)	Non Gov Approved Schemes	19.06	0.11	0.11 RCD	No
E6 Intermediate floor within a dwelling	Non Gov Approved Schemes	19.06	0.00	0.00 RCD	No
E10 Eaves (insulation at ceiling level)	Non Gov Approved Schemes	10.06	0.06	0.06 RCD	No
E12 Gable (insulation at ceiling level)	Non Gov Approved Schemes	9.01	0.10	0.10 RCD	No
E16 Corner (normal)	Non Gov Approved Schemes	10.40	0.05	0.05 RCD	No
E18 Party wall between dwellings	Non Gov Approved Schemes	10.40	0.04	0.04 RCD	No
P1 Party wall - Ground floor	Non Gov Approved Schemes	9.01	0.11	0.11 RCD	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	0.00	0.00	9.01 Default	No
P4 Party wall - Roof (insulation at ceiling level)	Non Gov Approved Schemes	9.01	0.10	0.10 RCD	No

Y-value

0.04 W/m²K

18.0 Pressure Testing

Yes

Designed AP₅₀

4.50 m³/(h.m²) @ 50 Pa

Property Tested?

Yes

Test Method

Blower Door

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

No

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

No

22.0 Lighting

No Fixed Lighting

No

Name	Efficacy	Power	Capacity	Count
Lighting 1	75.00	10.00	750.00	20

24.0 Main Heating 1

Database

Percentage of Heat

100.00 %

Database Ref. No.

17929

Summary for Input Data

Fuel Type	Mains gas
SAP Code	0
In Winter	89.00
In Summer	87.30
Model Name	LOGIC COMBI
Manufacturer	Ideal Boilers
System Type	Combi boiler
Controls SAP Code	2110
Delayed Start Stat	Yes
Burner Control	Modulating
HETAS approved System	No
Oil Pump Inside	No
FI Case	0.00
Flue Type	Balanced
Fan Assisted Flue	Yes
Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators
Underfloor Heating	Yes - Pipes in thin screed
Flow Temperature	Enter value
Flow Temperature Value	55.00
Boiler Interlock	Yes
Combi boiler type	No Combi
Combi keep hot type	None

25.0 Main Heating 2

26.0 Heat Networks

	Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1	None									
Heat source 2	None									
Heat source 3	None									
Heat source 4	None									
Heat source 5	None									

28.0 Water Heating

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

28.1 Showers

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

Summary for Input Data

Shower 2

Combi boiler or unvented hot water system

8.00

No

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

	None	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.50	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	

31.0 Thermal Store

None

34.0 Small-scale Hydro

	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Property Reference	Plot 3	Issued on Date	11/07/2024
Assessment Reference	001	Prop Type Ref	Plot 3
Property	Plot 3		

SAP Rating	85 B	DER	13.46	TER	10.29
Environmental	86 B	% DER < TER			-30.81
CO ₂ Emissions (t/year)	1.85	DFEE	43.64	TFEE	44.53
Compliance Check	See BREL	% DFEE < TFEE			2.01
% DPER < TPER	-37.33	DPER	74.32	TPER	54.12

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

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

Orientation	Southeast	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2024	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	N/A	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
Basement:	0.00 m	0.00 m ²	0.00 m
Ground floor:	44.82 m	82.18 m ²	2.50 m
1st Storey:	35.70 m	74.77 m ²	2.70 m
2nd Storey:	0.00 m	0.00 m ²	0.00 m
3rd Storey:	0.00 m	0.00 m ²	0.00 m
4th Storey:	0.00 m	0.00 m ²	0.00 m
5th Storey:	0.00 m	0.00 m ²	0.00 m
6th Storey:	0.00 m	0.00 m ²	0.00 m
7th Storey:	0.00 m	0.00 m ²	0.00 m

8.0 Living Area	20.42	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
	External Wall 1	Cavity Wall	Cavity wall; dense plaster, lightweight aggregate block, filled cavity, any outside structure	0.20	140.00	208.45	176.41	0.00	None	32.04	Enter Gross Area

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Internal Wall 1	Plasterboard on timber frame	9.00	265.69
	Internal Wall 2	Dense block, plasterboard on dabs	75.00	89.35

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	0.09	9.00	74.77	74.77	None	0.00	Enter Gross Area	0.00
	Bay Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	1.22	1.22	None	0.00	Enter Gross Area	0.00

Summary for Input Data

10.2 Internal Ceilings

Description	Storey	Construction	Area (m²)
Internal Ceiling 1	+1	Plasterboard ceiling, carpeted chipboard floor	74.77

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	82.18

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	9.00	74.77

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Doors	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1		Air Filled	0.63	Wood	0.70	1.20
Windows	BFRG, BSI or CERTASS data	Window	Double Low-E Soft 0.1		Air Filled	0.45	Wood	1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Doors	Doors	External Wall 1	South East	2.07	0
Front Windows	Windows	External Wall 1	South East	8.54	0
Rear Windows	Windows	External Wall 1	North West	14.58	0
Side Windows RHS	Windows	External Wall 1	South West	2.11	0
Side Door	Doors	External Wall 1	South West	2.07	0
Rear Door	Doors	External Wall 1	North West	2.07	0
Side Windows LHS	Windows	External Wall 1	North East	0.60	0

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)	Non Gov Approved Schemes	22.17	0.05	0.05 HiTherm	No
E3 Sill	Non Gov Approved Schemes	19.21	0.02	0.02 RCD	No
E4 Jamb	Non Gov Approved Schemes	47.75	0.02	0.02 RCD	No
E5 Ground floor (normal)	Non Gov Approved Schemes	44.82	0.11	0.11 RCD	No
E6 Intermediate floor within a dwelling	Non Gov Approved Schemes	35.70	0.00	0.00 RCD	No
E10 Eaves (insulation at ceiling level)	Non Gov Approved Schemes	43.42	0.06	0.06 RCD	No
E12 Gable (insulation at ceiling level)	Non Gov Approved Schemes	4.67	0.10	0.10 RCD	No
E16 Corner (normal)	Non Gov Approved Schemes	36.00	0.05	0.05 RCD	No
E17 Corner (inverted – internal area greater than external area)	Non Gov Approved Schemes	15.20	-0.10	-0.10 RCD	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP ₅₀	4.50	m³/(h.m²) @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

19.0 Mechanical Ventilation

Mechanical Ventilation	
Mechanical Ventilation System Present	No

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

22.0 Lighting

No Fixed Lighting	No				
Name	Efficacy	Power	Capacity	Count	
Lighting 1	75.00	10.00	750.00	20	

24.0 Main Heating 1

Database		
Percentage of Heat	100.00	%
Database Ref. No.	17929	
Fuel Type	Mains gas	
SAP Code	0	

Summary for Input Data

In Winter	89.00
In Summer	87.30
Model Name	LOGIC COMBI
Manufacturer	Ideal Boilers
System Type	Combi boiler
Controls SAP Code	2110
Delayed Start Stat	Yes
Burner Control	Modulating
HETAS approved System	No
Oil Pump Inside	No
FI Case	0.00
Flue Type	Balanced
Fan Assisted Flue	Yes
Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators
Underfloor Heating	Yes - Pipes in thin screed
Flow Temperature	Enter value
Flow Temperature Value	55.00
Boiler Interlock	Yes
Combi boiler type	No 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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	Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1	None									
Heat source 2	None									
Heat source 3	None									
Heat source 4	None									
Heat source 5	None									

28.0 Water Heating

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Shower 1	Combi boiler or unvented hot water system	8.00		No	
Shower 2	Combi boiler or unvented hot water system	8.00		No	
Shower 3	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

	None	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.50	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	

31.0 Thermal Store

None

34.0 Small-scale Hydro

	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data



Property Reference	Plot 4	Issued on Date	11/07/2024
Assessment Reference	001	Prop Type Ref	Plot 4
Property	Plot 4		

SAP Rating	86 B	DER	12.70	TER	9.35
Environmental	87 B	% DER < TER			-35.83
CO ₂ Emissions (t/year)	1.99	DFEE	42.80	TFEE	43.30
Compliance Check	See BREL	% DFEE < TFEE			1.16
% DPER < TPER	-42.33	DPER	70.16	TPER	49.29

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

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

Orientation	Southeast	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2024	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	N/A	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
Basement:	0.00 m	0.00 m ²	0.00 m
Ground floor:	45.93 m	97.07 m ²	2.50 m
1st Storey:	36.39 m	82.38 m ²	2.70 m
2nd Storey:	0.00 m	0.00 m ²	0.00 m
3rd Storey:	0.00 m	0.00 m ²	0.00 m
4th Storey:	0.00 m	0.00 m ²	0.00 m
5th Storey:	0.00 m	0.00 m ²	0.00 m
6th Storey:	0.00 m	0.00 m ²	0.00 m
7th Storey:	0.00 m	0.00 m ²	0.00 m

8.0 Living Area	22.42	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	
External Wall 1	Cavity Wall	Cavity wall; dense plaster, lightweight aggregate block, filled cavity, any outside structure	0.20	140.00	213.05	173.97	0.00	None	39.08	Enter Gross Area	

9.2 Internal Walls					Kappa (kJ/m ² K)	Area (m ²)
Description	Construction					
Internal Wall 1	Plasterboard on timber frame				9.00	302.04
Internal Wall 2	Dense block, plasterboard on dabs				75.00	81.72

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	0.09	9.00	82.38	82.38	None	0.00	Enter Gross Area	0.00	
Bay Roof	External Flat Roof	Plasterboard, insulated flat roof	0.15	9.00	1.76	1.76	None	0.00	Enter Gross Area	0.00	

Summary for Input Data

10.2 Internal Ceilings

Description	Storey	Construction	Area (m²)
Internal Ceiling 1	+1	Plasterboard ceiling, carpeted chipboard floor	82.38

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	97.07

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	9.00	82.38

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Doors	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1		Air Filled	0.63	Wood	0.70	1.20
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1		Air Filled	0.45	Wood	1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Doors	Doors	External Wall 1	South East	2.24	0
Front Windows	Windows	External Wall 1	South East	8.38	0
Rear Windows	Windows	External Wall 1	North West	21.44	0
Rear Door	Doors	External Wall 1	North West	2.07	0
Side Windows LHS	Windows	External Wall 1	South West	1.51	0
Bay Windows 1	Windows	External Wall 1	South	1.72	0
Bay Windows 2	Windows	External Wall 1	East	1.72	0

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)	Non Gov Approved Schemes	24.19	0.05	0.05 HiTherm	No
E3 Sill	Non Gov Approved Schemes	22.24	0.02	0.02 RCD	No
E4 Jamb	Non Gov Approved Schemes	53.98	0.02	0.02 RCD	No
E5 Ground floor (normal)	Non Gov Approved Schemes	45.93	0.11	0.11 RCD	No
E6 Intermediate floor within a dwelling	Non Gov Approved Schemes	36.39	0.00	0.00 RCD	No
E10 Eaves (insulation at ceiling level)	Non Gov Approved Schemes	25.70	0.06	0.06 RCD	No
E12 Gable (insulation at ceiling level)	Non Gov Approved Schemes	18.99	0.10	0.10 RCD	No
E16 Corner (normal)	Non Gov Approved Schemes	35.80	0.05	0.05 RCD	No
E17 Corner (inverted – internal area greater than external area)	Non Gov Approved Schemes	15.00	-0.10	-0.10 RCD	No
E14 Flat roof	Table K1 - Default	5.46	0.16	0.16	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Property Tested?

Test Method

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

22.0 Lighting

No Fixed Lighting

Name	Efficacy	Power	Capacity	Count
Lighting 1	75.00	10.00	750.00	20

24.0 Main Heating 1

Percentage of Heat %

Database Ref. No.

Fuel Type

Summary for Input Data

SAP Code	0
In Winter	89.00
In Summer	87.30
Model Name	LOGIC COMBI
Manufacturer	Ideal Boilers
System Type	Combi boiler
Controls SAP Code	2110
Delayed Start Stat	Yes
Burner Control	Modulating
HETAS approved System	No
Oil Pump Inside	No
FI Case	0.00
Flue Type	Balanced
Fan Assisted Flue	Yes
Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators
Underfloor Heating	Yes - Pipes in thin screed
Flow Temperature	Enter value
Flow Temperature Value	55.00
Boiler Interlock	Yes
Combi boiler type	No Combi
Combi keep hot type	None

25.0 Main Heating 2

26.0 Heat Networks

	Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1	None									
Heat source 2	None									
Heat source 3	None									
Heat source 4	None									
Heat source 5	None									

28.0 Water Heating

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Shower 1	Combi boiler or unvented hot water system	8.00		No	
Shower 2	Combi boiler or unvented hot water system	8.00		No	
Shower 3	Combi boiler or unvented hot water system	8.00		No	

Summary for Input Data

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

	None	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.50	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	

31.0 Thermal Store

None

34.0 Small-scale Hydro

	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data



Property Reference	Plot 5	Issued on Date	11/07/2024
Assessment Reference	001	Prop Type Ref	Plot 5
Property	Plot 5		

SAP Rating	85 B	DER	14.53	TER	11.60
Environmental	88 B	% DER < TER			-25.26
CO ₂ Emissions (t/year)	1.12	DFEE	38.96	TFEE	39.43
Compliance Check	See BREL	% DFEE < TFEE			1.20
% DPER < TPER	-33.20	DPER	80.79	TPER	60.65

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

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

Orientation	Southeast	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Semi-Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2024	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	N/A	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
Basement:	0.00 m	0.00 m ²	0.00 m
Ground floor:	23.73 m	49.04 m ²	2.50 m
1st Storey:	17.44 m	37.99 m ²	2.70 m
2nd Storey:	0.00 m	0.00 m ²	0.00 m
3rd Storey:	0.00 m	0.00 m ²	0.00 m
4th Storey:	0.00 m	0.00 m ²	0.00 m
5th Storey:	0.00 m	0.00 m ²	0.00 m
6th Storey:	0.00 m	0.00 m ²	0.00 m
7th Storey:	0.00 m	0.00 m ²	0.00 m

8.0 Living Area	15.85	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	External Wall 1	Cavity Wall	Cavity wall; dense plaster, lightweight aggregate block, filled cavity, any outside structure	0.20	140.00	106.41	89.85	0.00	None	16.56	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	44.15	0.00	None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Internal Wall 1	Plasterboard on timber frame	9.00	181.63

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area	Shelter Code	Shelter Factor	Calculation Type	Openings
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Summary for Input Data



Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	37.99	37.99	(m ²)	None	0.00	Enter Gross Area	0.00
Flat Roof	External Flat Roof	Plasterboard, insulated flat roof	0.12	9.00	10.83	10.83		None	0.00	Enter Gross Area	0.00

10.2 Internal Ceilings

Description	Storey	Construction	Area (m ²)
Internal Ceiling 1	+1	Plasterboard ceiling, carpeted chipboard floor	37.99

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	49.04

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	9.00	37.99

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 Doors	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1		Air Filled	0.63	Wood	0.70	1.20
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1		Air Filled	0.45	Wood	1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Doors	Front Doors	External Wall 1	South East	2.07	0
Front Windows	Windows	External Wall 1	South East	4.32	0
Rear Windows	Windows	External Wall 1	North West	8.73	0
Side Windows	Windows	External Wall 1	South West	1.44	0

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)	Non Gov Approved Schemes	11.49	0.05	0.05 HiTherm	No
E3 Sill	Non Gov Approved Schemes	10.50	0.02	0.02 RCD	No
E4 Jamb	Non Gov Approved Schemes	20.40	0.02	0.02 RCD	No
E5 Ground floor (normal)	Non Gov Approved Schemes	23.73	0.11	0.11 RCD	No
E6 Intermediate floor within a dwelling	Non Gov Approved Schemes	17.44	0.00	0.00 RCD	No
E10 Eaves (insulation at ceiling level)	Non Gov Approved Schemes	8.95	0.06	0.06 RCD	No
E12 Gable (insulation at ceiling level)	Non Gov Approved Schemes	8.49	0.10	0.10 RCD	No
E16 Corner (normal)	Non Gov Approved Schemes	12.90	0.05	0.05 RCD	No
E18 Party wall between dwellings	Non Gov Approved Schemes	5.00	0.04	0.04 RCD	No
P1 Party wall - Ground floor	Non Gov Approved Schemes	8.49	0.11	0.11 RCD	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	8.49	0.00	9.01 Default	No
P4 Party wall - Roof (insulation at ceiling level)	Non Gov Approved Schemes	8.49	0.10	0.10 RCD	No
E17 Corner (inverted – internal area greater than external area)	Non Gov Approved Schemes	2.50	-0.10	-0.10	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Property Tested?

Test Method

19.0 Mechanical Ventilation

Mechanical Ventilation

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

22.0 Lighting

No Fixed Lighting

Name	Efficacy	Power	Capacity	Count
Lighting 1	75.00	10.00	750.00	20

24.0 Main Heating 1

Summary for Input Data



Percentage of Heat	100.00	%
Database Ref. No.	17929	
Fuel Type	Mains gas	
SAP Code	0	
In Winter	89.00	
In Summer	87.30	
Model Name	LOGIC COMBI	
Manufacturer	Ideal Boilers	
System Type	Combi boiler	
Controls SAP Code	2110	
Delayed Start Stat	Yes	
Burner Control	Modulating	
HETAS approved System	No	
Oil Pump Inside	No	
FI Case	0.00	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	
Flow Temperature Value	55.00	
Boiler Interlock	Yes	
Combi boiler type	No Combi	
Combi keep hot type	None	

25.0 Main Heating 2

None

26.0 Heat Networks

None

	Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1	None									
Heat source 2	None									
Heat source 3	None									
Heat source 4	None									
Heat source 5	None									

28.0 Water Heating

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

28.1 Showers

Summary for Input Data

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

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Cylinder Stat	None				
Cylinder In Heated Space	Yes				
Independent Time Control	Yes				
Insulation Type	Measured Loss				
Cylinder Volume	200.00			L	
Loss	1.50			kWh/day	
Pipes insulation	Fully insulated primary pipework				
In Airing Cupboard	No				

31.0 Thermal Store

	None				
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34.0 Small-scale Hydro

Electricity Generated	None				
Apportioned	0.00			kWh/Year	
Connected to dwelling's electricity meter	Yes				
Electricity Generation	Annual				

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Property Reference	Plot 7	Issued on Date	11/07/2024
Assessment Reference	001	Prop Type Ref	Plot 7
Property	Plot 7		

SAP Rating	85 B	DER	14.71	TER	12.34
Environmental	88 B	% DER < TER			-19.21
CO ₂ Emissions (t/year)	0.99	DFEE	37.26	TFEE	37.79
Compliance Check	See BREL	% DFEE < TFEE			1.40
% DPER < TPER	-26.84	DPER	81.89	TPER	64.56

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

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

Orientation	Southeast	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Semi-Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2024	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	N/A	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
Basement:	0.00 m	0.00 m ²	0.00 m
Ground floor:	17.44 m	37.99 m ²	2.50 m
1st Storey:	17.44 m	37.99 m ²	2.70 m
2nd Storey:	0.00 m	0.00 m ²	0.00 m
3rd Storey:	0.00 m	0.00 m ²	0.00 m
4th Storey:	0.00 m	0.00 m ²	0.00 m
5th Storey:	0.00 m	0.00 m ²	0.00 m
6th Storey:	0.00 m	0.00 m ²	0.00 m
7th Storey:	0.00 m	0.00 m ²	0.00 m

8.0 Living Area	15.34	m ²
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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 Wall 1	Cavity Wall	Cavity wall; dense plaster, lightweight aggregate block, filled cavity, any outside structure	0.20	140.00	90.69	76.29	0.00	None	14.40	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	44.22	0.00	None

9.2 Internal Walls			
Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Wall 1	Plasterboard on timber frame	9.00	162.52

10.0 External Roofs										
Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area	Shelter Code	Shelter Factor	Calculation Type	Openings

Summary for Input Data



Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	37.99	(m ²) 37.99	None	0.00	Enter Gross Area	0.00
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10.2 Internal Ceilings

Description	Storey	Construction	Area (m ²)
Internal Ceiling 1	+1	Plasterboard ceiling, carpeted chipboard floor	37.99

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	37.99

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	9.00	37.99

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 Doors	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1		Air Filled	0.63	Wood	0.70	1.20
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1		Air Filled	0.45	Wood	1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Doors	Front Doors	External Wall 1	South East	2.07	0
Front Windows	Windows	External Wall 1	South East	4.32	0
Rear Windows	Windows	External Wall 1	North West	6.57	0
Side Windows	Windows	External Wall 1	South West	1.44	0

14.0 Conservatory

None

15.0 Draught Proofing

100 %

16.0 Draught Lobby

No

17.0 Thermal Bridging

Calculate Bridges

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Non Gov Approved Schemes	9.69	0.05	0.05 HiTherm	No
E3 Sill	Non Gov Approved Schemes	8.70	0.02	0.02 RCD	No
E4 Jamb	Non Gov Approved Schemes	18.00	0.02	0.02 RCD	No
E5 Ground floor (normal)	Non Gov Approved Schemes	17.44	0.11	0.11 RCD	No
E6 Intermediate floor within a dwelling	Non Gov Approved Schemes	17.44	0.00	0.00 RCD	No
E10 Eaves (insulation at ceiling level)	Non Gov Approved Schemes	8.95	0.06	0.06 RCD	No
E12 Gable (insulation at ceiling level)	Non Gov Approved Schemes	8.49	0.10	0.10 RCD	No
E16 Corner (normal)	Non Gov Approved Schemes	10.40	0.05	0.05 RCD	No
E18 Party wall between dwellings	Non Gov Approved Schemes	10.40	0.04	0.04 RCD	No
P1 Party wall - Ground floor	Non Gov Approved Schemes	8.49	0.11	0.11 RCD	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	8.49	0.00	9.01 Default	No
P4 Party wall - Roof (insulation at ceiling level)	Non Gov Approved Schemes	8.49	0.10	0.10 RCD	No

Y-value 0.04 W/m²K

18.0 Pressure Testing

Yes

Designed AP₅₀ 4.50 m³/(h.m²) @ 50 Pa

Property Tested? Yes

Test Method Blower Door

19.0 Mechanical Ventilation

Mechanical Ventilation System Present No

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

No

22.0 Lighting

No Fixed Lighting No

Name	Efficacy	Power	Capacity	Count
Lighting 1	75.00	10.00	750.00	20

24.0 Main Heating 1

Database

Percentage of Heat 100.00 %

Database Ref. No. 17929

Summary for Input Data

Fuel Type	Mains gas
SAP Code	0
In Winter	89.00
In Summer	87.30
Model Name	LOGIC COMBI
Manufacturer	Ideal Boilers
System Type	Combi boiler
Controls SAP Code	2110
Delayed Start Stat	Yes
Burner Control	Modulating
HETAS approved System	No
Oil Pump Inside	No
FI Case	0.00
Flue Type	Balanced
Fan Assisted Flue	Yes
Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators
Underfloor Heating	Yes - Pipes in thin screed
Flow Temperature	Enter value
Flow Temperature Value	55.00
Boiler Interlock	Yes
Combi boiler type	No Combi
Combi keep hot type	None

25.0 Main Heating 2

26.0 Heat Networks

	Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1	None									
Heat source 2	None									
Heat source 3	None									
Heat source 4	None									
Heat source 5	None									

28.0 Water Heating

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

28.1 Showers

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

Summary for Input Data

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

	None	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.50	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	

31.0 Thermal Store

34.0 Small-scale Hydro

	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Lower cost measures

None

Further measures to achieve even higher standards

None

14.3 APPENDIX C: SAMPLE SAP SUMMARY INFORMATION SHEETS (BE GREEN)

Summary for Input Data



Property Reference	Plot 1	Issued on Date	11/07/2024
Assessment Reference	001	Prop Type Ref	Plot 1
Property	Plot 1		

SAP Rating	86 B	DER	3.41	TER	11.05
Environmental	97 A	% DER < TER			69.14
CO ₂ Emissions (t/year)	0.28	DFEE	36.90	TFEE	37.48
Compliance Check	See BREL	% DFEE < TFEE			1.54
% DPER < TPER	38.06	DPER	35.73	TPER	57.68

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

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

Orientation	Southeast	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Semi-Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2024	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	N/A	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
Basement:	0.00 m	0.00 m ²	0.00 m
Ground floor:	19.06 m	45.29 m ²	2.50 m
1st Storey:	19.06 m	45.29 m ²	2.70 m
2nd Storey:	0.00 m	0.00 m ²	0.00 m
3rd Storey:	0.00 m	0.00 m ²	0.00 m
4th Storey:	0.00 m	0.00 m ²	0.00 m
5th Storey:	0.00 m	0.00 m ²	0.00 m
6th Storey:	0.00 m	0.00 m ²	0.00 m
7th Storey:	0.00 m	0.00 m ²	0.00 m

8.0 Living Area	16.08	m ²
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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 Wall 1	Cavity Wall	Cavity wall; dense plaster, lightweight aggregate block, filled cavity, any outside structure	0.20	140.00	99.13	82.36	0.00	None	16.77	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	46.87	0.00	None

9.2 Internal Walls			
Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Wall 1	Plasterboard on timber frame	9.00	217.17

10.0 External Roofs										
Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area	Shelter Code	Shelter Factor	Calculation Type	Openings

Summary for Input Data



Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	45.29	(m ²) 45.29	None	0.00	Enter Gross Area	0.00
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10.2 Internal Ceilings

Description	Storey	Construction	Area (m ²)
Internal Ceiling 1	+1	Plasterboard ceiling, carpeted chipboard floor	45.29

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	45.29

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	9.00	45.29

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 Doors	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1		Air Filled	0.63	Wood	0.70	1.20
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1		Air Filled	0.45	Wood	1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Doors	Front Doors	External Wall 1	South East	2.07	0
Front Windows	Windows	External Wall 1	South East	4.42	0
Rear Windows	Windows	External Wall 1	North West	9.26	0
Side Windows	Windows	External Wall 1	South West	1.02	0

14.0 Conservatory

None

15.0 Draught Proofing

100 %

16.0 Draught Lobby

No

17.0 Thermal Bridging

Calculate Bridges

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Non Gov Approved Schemes	12.15	0.05	0.05 HiTherm	No
E3 Sill	Non Gov Approved Schemes	11.17	0.02	0.02 RCD	No
E4 Jamb	Non Gov Approved Schemes	24.70	0.02	0.02 RCD	No
E5 Ground floor (normal)	Non Gov Approved Schemes	19.06	0.11	0.11 RCD	No
E6 Intermediate floor within a dwelling	Non Gov Approved Schemes	19.06	0.00	0.00 RCD	No
E10 Eaves (insulation at ceiling level)	Non Gov Approved Schemes	10.06	0.06	0.06 RCD	No
E12 Gable (insulation at ceiling level)	Non Gov Approved Schemes	9.01	0.10	0.10 RCD	No
E16 Corner (normal)	Non Gov Approved Schemes	10.40	0.05	0.05 RCD	No
E18 Party wall between dwellings	Non Gov Approved Schemes	10.40	0.04	0.04 RCD	No
P1 Party wall - Ground floor	Non Gov Approved Schemes	9.01	0.11	0.11 RCD	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	0.00	0.00	9.01 Default	No
P4 Party wall - Roof (insulation at ceiling level)	Non Gov Approved Schemes	9.01	0.10	0.10 RCD	No

Y-value

0.04 W/m²K

18.0 Pressure Testing

Yes

Designed AP₅₀ 4.50 m³/(h.m²) @ 50 Pa

Property Tested? Yes

Test Method Blower Door

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present No

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

No

22.0 Lighting

No Fixed Lighting No

Name	Efficacy	Power	Capacity	Count
Lighting 1	75.00	10.00	750.00	20

24.0 Main Heating 1

Database

Percentage of Heat 100.00 %

Database Ref. No. 106467

Summary for Input Data

Fuel Type	Electricity
SAP Code	0
In Winter	344.16
In Summer	269.71
Model Name	EDLA04EV3
Manufacturer	Daikin Europe NV
System Type	Heat Pump
Controls SAP Code	2207
Delayed Start Stat	No
HETAS approved System	No
Oil Pump Inside	No
FI Case	0.00
Flue Type	None or Unknown
Fan Assisted Flue	No
Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators and Underfloor
Underfloor Heating	Yes - Pipes in thin screed
Flow Temperature	Enter value
Flow Temperature Value	35.00
Boiler Interlock	No
Combi boiler type	No Combi
Combi keep hot type	None

25.0 Main Heating 2

26.0 Heat Networks

	Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1	None									
Heat source 2	None									
Heat source 3	None									
Heat source 4	None									
Heat source 5	None									

28.0 Water Heating

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

28.1 Showers

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

Summary for Input Data

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Cylinder Stat

Hot Water Cylinder

Yes

Cylinder In Heated Space

Yes

Independent Time Control

Yes

Insulation Type

Measured Loss

Cylinder Volume

200.00

L

Loss

1.50

kWh/day

Pipes insulation

Fully insulated primary pipework

In Airing Cupboard

No

31.0 Thermal Store

None

34.0 Small-scale Hydro

Electricity Generated

None

Apportioned

0.00

kWh/Year

Connected to dwelling's electricity meter

Yes

Electricity Generation

Annual

Jan

Feb

Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

Nov

Dec

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Property Reference	Plot 3	Issued on Date	11/07/2024
Assessment Reference	001	Prop Type Ref	Plot 3
Property	Plot 3		

SAP Rating	86 B	DER	2.90	TER	10.08
Environmental	97 A	% DER < TER			71.23
CO ₂ Emissions (t/year)	0.41	DFEE	43.64	TFEE	44.53
Compliance Check	See BREL	% DFEE < TFEE			2.01
% DPER < TPER	43.21	DPER	30.10	TPER	53.00

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

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

Orientation	Southeast	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2024	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	N/A	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
Basement:	0.00 m	0.00 m ²	0.00 m
Ground floor:	44.82 m	82.18 m ²	2.50 m
1st Storey:	35.70 m	74.77 m ²	2.70 m
2nd Storey:	0.00 m	0.00 m ²	0.00 m
3rd Storey:	0.00 m	0.00 m ²	0.00 m
4th Storey:	0.00 m	0.00 m ²	0.00 m
5th Storey:	0.00 m	0.00 m ²	0.00 m
6th Storey:	0.00 m	0.00 m ²	0.00 m
7th Storey:	0.00 m	0.00 m ²	0.00 m

8.0 Living Area	20.42	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	
External Wall 1	Cavity Wall	Cavity wall; dense plaster, lightweight aggregate block, filled cavity, any outside structure	0.20	140.00	208.45	176.41	0.00	None	32.04	Enter Gross Area	

9.2 Internal Walls				
Description	Construction	Kappa (kJ/m ² K)	Area (m ²)	
Internal Wall 1	Plasterboard on timber frame	9.00	265.69	
Internal Wall 2	Dense block, plasterboard on dabs	75.00	89.35	

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	0.09	9.00	74.77	74.77	None	0.00	Enter Gross Area	0.00	
Bay Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	1.22	1.22	None	0.00	Enter Gross Area	0.00	

Summary for Input Data

10.2 Internal Ceilings

Description	Storey	Construction	Area (m²)
Internal Ceiling 1	+1	Plasterboard ceiling, carpeted chipboard floor	74.77

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	82.18

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	9.00	74.77

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Doors	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1		Air Filled	0.63	Wood	0.70	1.20
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1		Air Filled	0.45	Wood	1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Doors	Doors	External Wall 1	South East	2.07	0
Front Windows	Windows	External Wall 1	South East	8.54	0
Rear Windows	Windows	External Wall 1	North West	14.58	0
Side Windows RHS	Windows	External Wall 1	South West	2.11	0
Side Door	Doors	External Wall 1	South West	2.07	0
Rear Door	Doors	External Wall 1	North West	2.07	0
Side Windows LHS	Windows	External Wall 1	North East	0.60	0

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)	Non Gov Approved Schemes	22.17	0.05	0.05 HiTherm	No
E3 Sill	Non Gov Approved Schemes	19.21	0.02	0.02 RCD	No
E4 Jamb	Non Gov Approved Schemes	47.75	0.02	0.02 RCD	No
E5 Ground floor (normal)	Non Gov Approved Schemes	44.82	0.11	0.11 RCD	No
E6 Intermediate floor within a dwelling	Non Gov Approved Schemes	35.70	0.00	0.00 RCD	No
E10 Eaves (insulation at ceiling level)	Non Gov Approved Schemes	43.42	0.06	0.06 RCD	No
E12 Gable (insulation at ceiling level)	Non Gov Approved Schemes	4.67	0.10	0.10 RCD	No
E16 Corner (normal)	Non Gov Approved Schemes	36.00	0.05	0.05 RCD	No
E17 Corner (inverted – internal area greater than external area)	Non Gov Approved Schemes	15.20	-0.10	-0.10 RCD	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP ₅₀	4.50	m³/(h.m²) @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

19.0 Mechanical Ventilation

Mechanical Ventilation	
Mechanical Ventilation System Present	No

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

22.0 Lighting

No Fixed Lighting	No				
Name	Efficacy	Power	Capacity	Count	
Lighting 1	75.00	10.00	750.00	20	

24.0 Main Heating 1

Database		
Percentage of Heat	100.00	%
Database Ref. No.	105233	
Fuel Type	Electricity	
SAP Code	0	

Summary for Input Data

In Winter	385.42
In Summer	273.61
Model Name	EDLA09DA3V3
Manufacturer	Daikin Europe NV
System Type	Heat Pump
Controls SAP Code	2207
Delayed Start Stat	No
Burner Control	Modulating
HETAS approved System	No
Oil Pump Inside	No
FI Case	0.00
Flue Type	None or Unknown
Fan Assisted Flue	No
Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators and Underfloor
Underfloor Heating	Yes - Pipes in thin screed
Flow Temperature	Enter value
Flow Temperature Value	35.00
Boiler Interlock	No
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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	Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1	None									
Heat source 2	None									
Heat source 3	None									
Heat source 4	None									
Heat source 5	None									

28.0 Water Heating

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Shower 1	Combi boiler or unvented hot water system	8.00		No	
Shower 2	Combi boiler or unvented hot water system	8.00		No	
Shower 3	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

Hot Water Cylinder	Hot Water Cylinder	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.50	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	

31.0 Thermal Store

None

34.0 Small-scale Hydro

None		
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Property Reference	Plot 4	Issued on Date	11/07/2024
Assessment Reference	001	Prop Type Ref	Plot 4
Property	Plot 4		

SAP Rating	86 B	DER	2.72	TER	9.17
Environmental	97 A	% DER < TER			70.34
CO ₂ Emissions (t/year)	0.44	DFEE	42.80	TFEE	43.30
Compliance Check	See BREL	% DFEE < TFEE			1.16
% DPER < TPER	41.67	DPER	28.21	TPER	48.36

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

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

Orientation	Southeast	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2024	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	N/A	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
Basement:	0.00 m	0.00 m ²	0.00 m
Ground floor:	45.93 m	97.07 m ²	2.50 m
1st Storey:	36.39 m	82.38 m ²	2.70 m
2nd Storey:	0.00 m	0.00 m ²	0.00 m
3rd Storey:	0.00 m	0.00 m ²	0.00 m
4th Storey:	0.00 m	0.00 m ²	0.00 m
5th Storey:	0.00 m	0.00 m ²	0.00 m
6th Storey:	0.00 m	0.00 m ²	0.00 m
7th Storey:	0.00 m	0.00 m ²	0.00 m

8.0 Living Area	22.42	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	
External Wall 1	Cavity Wall	Cavity wall; dense plaster, lightweight aggregate block, filled cavity, any outside structure	0.20	140.00	213.05	173.97	0.00	None	39.08	Enter Gross Area	

9.2 Internal Walls				
Description	Construction	Kappa (kJ/m ² K)	Area (m ²)	
Internal Wall 1	Plasterboard on timber frame	9.00	302.04	
Internal Wall 2	Dense block, plasterboard on dabs	75.00	81.72	

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	0.09	9.00	82.38	82.38	None	0.00	Enter Gross Area	0.00	
Bay Roof	External Flat Roof	Plasterboard, insulated flat roof	0.15	9.00	1.76	1.76	None	0.00	Enter Gross Area	0.00	

Summary for Input Data

10.2 Internal Ceilings

Description	Storey	Construction	Area (m ²)
Internal Ceiling 1	+1	Plasterboard ceiling, carpeted chipboard floor	82.38

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	97.07

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	9.00	82.38

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)
Doors	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1		Air Filled	0.63	Wood	0.70	1.20
Windows	BFRG, BSI or CERTASS data	Window	Double Low-E Soft 0.1		Air Filled	0.45	Wood	1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Doors	Doors	External Wall 1	South East	2.24	0
Front Windows	Windows	External Wall 1	South East	8.38	0
Rear Windows	Windows	External Wall 1	North West	21.44	0
Rear Door	Doors	External Wall 1	North West	2.07	0
Side Windows LHS	Windows	External Wall 1	South West	1.51	0
Bay Windows 1	Windows	External Wall 1	South	1.72	0
Bay Windows 2	Windows	External Wall 1	East	1.72	0

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)	Non Gov Approved Schemes	24.19	0.05	0.05 HiTherm	No
E3 Sill	Non Gov Approved Schemes	22.24	0.02	0.02 RCD	No
E4 Jamb	Non Gov Approved Schemes	53.98	0.02	0.02 RCD	No
E5 Ground floor (normal)	Non Gov Approved Schemes	45.93	0.11	0.11 RCD	No
E6 Intermediate floor within a dwelling	Non Gov Approved Schemes	36.39	0.00	0.00 RCD	No
E10 Eaves (insulation at ceiling level)	Non Gov Approved Schemes	25.70	0.06	0.06 RCD	No
E12 Gable (insulation at ceiling level)	Non Gov Approved Schemes	18.99	0.10	0.10 RCD	No
E16 Corner (normal)	Non Gov Approved Schemes	35.80	0.05	0.05 RCD	No
E17 Corner (inverted – internal area greater than external area)	Non Gov Approved Schemes	15.00	-0.10	-0.10 RCD	No
E14 Flat roof	Table K1 - Default	5.46	0.16	0.16	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Property Tested?

Test Method

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

22.0 Lighting

No Fixed Lighting

Name	Efficacy	Power	Capacity	Count
Lighting 1	75.00	10.00	750.00	20

24.0 Main Heating 1

Percentage of Heat %

Database Ref. No.

Fuel Type

Summary for Input Data

SAP Code	0
In Winter	389.32
In Summer	273.74
Model Name	EDLA09DA3V3
Manufacturer	Daikin Europe NV
System Type	Heat Pump
Controls SAP Code	2207
Delayed Start Stat	No
Burner Control	Modulating
HETAS approved System	No
Oil Pump Inside	No
FI Case	0.00
Flue Type	None or Unknown
Fan Assisted Flue	No
Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators and Underfloor
Underfloor Heating	Yes - Pipes in thin screed
Flow Temperature	Enter value
Flow Temperature Value	35.00
Boiler Interlock	No
Combi boiler type	Standard Combi
Combi keep hot type	None

25.0 Main Heating 2

26.0 Heat Networks

	Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1	None									
Heat source 2	None									
Heat source 3	None									
Heat source 4	None									
Heat source 5	None									

28.0 Water Heating

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Shower 1	Combi boiler or unvented hot water system	8.00		No	
Shower 2	Combi boiler or unvented hot water system	8.00		No	
Shower 3	Combi boiler or unvented hot water system	8.00		No	

Summary for Input Data

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Hot Water Cylinder	Hot Water Cylinder	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.50	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	

31.0 Thermal Store

None

34.0 Small-scale Hydro

None	
Electricity Generated	0.00
Apportioned	0.00
Connected to dwelling's electricity meter	Yes
Electricity Generation	Annual

kWh/Year

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Summary for Input Data

Property Reference	Plot 5	Issued on Date	11/07/2024
Assessment Reference	001	Prop Type Ref	Plot 5
Property	Plot 5		

SAP Rating	86 B	DER	3.47	TER	11.26
Environmental	97 A	% DER < TER			69.18
CO ₂ Emissions (t/year)	0.27	DFEE	38.96	TFEE	39.43
Compliance Check	See BREL	% DFEE < TFEE			1.20
% DPER < TPER	38.19	DPER	36.35	TPER	58.80

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

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

Orientation	Southeast	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Semi-Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2024	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	N/A	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
Basement:	0.00 m	0.00 m ²	0.00 m
Ground floor:	23.73 m	49.04 m ²	2.50 m
1st Storey:	17.44 m	37.99 m ²	2.70 m
2nd Storey:	0.00 m	0.00 m ²	0.00 m
3rd Storey:	0.00 m	0.00 m ²	0.00 m
4th Storey:	0.00 m	0.00 m ²	0.00 m
5th Storey:	0.00 m	0.00 m ²	0.00 m
6th Storey:	0.00 m	0.00 m ²	0.00 m
7th Storey:	0.00 m	0.00 m ²	0.00 m

8.0 Living Area	15.85	m ²
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9.0 External Walls											
Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type	
External Wall 1	Cavity Wall	Cavity wall; dense plaster, lightweight aggregate block, filled cavity, any outside structure	0.20	140.00	106.41	89.85	0.00	None	16.56	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	44.15	0.00	None		

9.2 Internal Walls					
Description	Construction	Kappa (kJ/m ² K)	Area (m ²)		
Internal Wall 1	Plasterboard on timber frame	9.00	181.63		

10.0 External Roofs										
Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area	Shelter Code	Shelter Factor	Calculation Type	Openings

Summary for Input Data



Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	37.99	37.99	None	0.00	Enter Gross Area	0.00
Flat Roof	External Flat Roof	Plasterboard, insulated flat roof	0.12	9.00	10.83	10.83	None	0.00	Enter Gross Area	0.00

10.2 Internal Ceilings

Description	Storey	Construction	Area (m²)
Internal Ceiling 1	+1	Plasterboard ceiling, carpeted chipboard floor	37.99

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	49.04

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	9.00	37.99

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Front Doors	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1		Air Filled	0.63	Wood	0.70	1.20
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1		Air Filled	0.45	Wood	1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front Doors	Front Doors	External Wall 1	South East	2.07	0
Front Windows	Windows	External Wall 1	South East	4.32	0
Rear Windows	Windows	External Wall 1	North West	8.73	0
Side Windows	Windows	External Wall 1	South West	1.44	0

14.0 Conservatory

None

15.0 Draught Proofing

100

%

16.0 Draught Lobby

No

17.0 Thermal Bridging

Calculate Bridges

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted	Reference:	Imported
E2 Other lintels (including other steel lintels)	Non Gov Approved Schemes	11.49	0.05	0.05	HiTherm	No
E3 Sill	Non Gov Approved Schemes	10.50	0.02	0.02	RCD	No
E4 Jamb	Non Gov Approved Schemes	20.40	0.02	0.02	RCD	No
E5 Ground floor (normal)	Non Gov Approved Schemes	23.73	0.11	0.11	RCD	No
E6 Intermediate floor within a dwelling	Non Gov Approved Schemes	17.44	0.00	0.00	RCD	No
E10 Eaves (insulation at ceiling level)	Non Gov Approved Schemes	8.95	0.06	0.06	RCD	No
E12 Gable (insulation at ceiling level)	Non Gov Approved Schemes	8.49	0.10	0.10	RCD	No
E16 Corner (normal)	Non Gov Approved Schemes	12.90	0.05	0.05	RCD	No
E18 Party wall between dwellings	Non Gov Approved Schemes	5.00	0.04	0.04	RCD	No
P1 Party wall - Ground floor	Non Gov Approved Schemes	8.49	0.11	0.11	RCD	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	8.49	0.00	9.01	Default	No
P4 Party wall - Roof (insulation at ceiling level)	Non Gov Approved Schemes	8.49	0.10	0.10	RCD	No
E17 Corner (inverted – internal area greater than external area)	Non Gov Approved Schemes	2.50	-0.10	-0.10		No

Y-value

0.04

W/m²K

18.0 Pressure Testing

Yes

Designed AP₅₀

4.50

m³/(h.m²) @ 50 Pa

Property Tested?

Yes

Test Method

Blower Door

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

No

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

No

22.0 Lighting

No Fixed Lighting

No

Name	Efficacy	Power	Capacity	Count
Lighting 1	75.00	10.00	750.00	20

24.0 Main Heating 1

Database

Summary for Input Data

Percentage of Heat	100.00	%
Database Ref. No.	106467	
Fuel Type	Electricity	
SAP Code	0	
In Winter	344.83	
In Summer	269.85	
Model Name	EDLA04EV3	
Manufacturer	Daikin Europe NV	
System Type	Heat Pump	
Controls SAP Code	2207	
Delayed Start Stat	No	
HETAS approved System	No	
Oil Pump Inside	No	
FI Case	0.00	
Flue Type	None or Unknown	
Fan Assisted Flue	No	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	
Flow Temperature Value	35.00	
Boiler Interlock	No	
Combi boiler type	No Combi	
Combi keep hot type	None	

25.0 Main Heating 2

None

26.0 Heat Networks

None

	Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1	None									
Heat source 2	None									
Heat source 3	None									
Heat source 4	None									
Heat source 5	None									

28.0 Water Heating

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

28.1 Showers

Summary for Input Data

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

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Hot Water Cylinder	
Cylinder Stat	Yes
Cylinder In Heated Space	Yes
Independent Time Control	Yes
Insulation Type	Measured Loss
Cylinder Volume	200.00 L
Loss	1.50 kWh/day
Pipes insulation	Fully insulated primary pipework
In Airing Cupboard	No

31.0 Thermal Store

None

34.0 Small-scale Hydro

None	
Electricity Generated	0.00
Apportioned	0.00 kWh/Year
Connected to dwelling's electricity meter	Yes
Electricity Generation	Annual

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Recommendations												
Lower cost measures												
None												
Further measures to achieve even higher standards												
None												

Summary for Input Data



Property Reference	Plot 7	Issued on Date	11/07/2024
Assessment Reference	001	Prop Type Ref	Plot 7
Property	Plot 7		

SAP Rating	86 B	DER	3.52	TER	11.96
Environmental	97 A	% DER < TER			70.57
CO ₂ Emissions (t/year)	0.24	DFEE	37.26	TFEE	37.79
Compliance Check	See BREL	% DFEE < TFEE			1.40
% DPER < TPER	40.82	DPER	36.99	TPER	62.51

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

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

Orientation	Southeast	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Semi-Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2024	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	N/A	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
Basement:	0.00 m	0.00 m ²	0.00 m
Ground floor:	17.44 m	37.99 m ²	2.50 m
1st Storey:	17.44 m	37.99 m ²	2.70 m
2nd Storey:	0.00 m	0.00 m ²	0.00 m
3rd Storey:	0.00 m	0.00 m ²	0.00 m
4th Storey:	0.00 m	0.00 m ²	0.00 m
5th Storey:	0.00 m	0.00 m ²	0.00 m
6th Storey:	0.00 m	0.00 m ²	0.00 m
7th Storey:	0.00 m	0.00 m ²	0.00 m

8.0 Living Area	15.34	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	External Wall 1	Cavity Wall	Cavity wall; dense plaster, lightweight aggregate block, filled cavity, any outside structure	0.20	140.00	90.69	76.29	0.00	None	14.40	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	44.22	0.00	None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Internal Wall 1	Plasterboard on timber frame	9.00	162.52

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area	Shelter Code	Shelter Factor	Calculation Type	Openings
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Summary for Input Data



Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	37.99	(m ²) 37.99	None	0.00	Enter Gross Area	0.00
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10.2 Internal Ceilings

Description	Storey	Construction	Area (m ²)
Internal Ceiling 1	+1	Plasterboard ceiling, carpeted chipboard floor	37.99

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Ground Floor	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.12	None	0.00	75.00	37.99

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Floor 1		Plasterboard ceiling, carpeted chipboard floor	9.00	37.99

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 Doors	Manufacturer	Half Glazed Door	Double Low-E Soft 0.1		Air Filled	0.63	Wood	0.70	1.20
Windows	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.1		Air Filled	0.45	Wood	1.00	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Front Doors	Front Doors	External Wall 1	South East	2.07	0
Front Windows	Windows	External Wall 1	South East	4.32	0
Rear Windows	Windows	External Wall 1	North West	6.57	0
Side Windows	Windows	External Wall 1	South West	1.44	0

14.0 Conservatory

None

15.0 Draught Proofing

100 %

16.0 Draught Lobby

No

17.0 Thermal Bridging

Calculate Bridges

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Non Gov Approved Schemes	9.69	0.05	0.05 HiTherm	No
E3 Sill	Non Gov Approved Schemes	8.70	0.02	0.02 RCD	No
E4 Jamb	Non Gov Approved Schemes	18.00	0.02	0.02 RCD	No
E5 Ground floor (normal)	Non Gov Approved Schemes	17.44	0.11	0.11 RCD	No
E6 Intermediate floor within a dwelling	Non Gov Approved Schemes	17.44	0.00	0.00 RCD	No
E10 Eaves (insulation at ceiling level)	Non Gov Approved Schemes	8.95	0.06	0.06 RCD	No
E12 Gable (insulation at ceiling level)	Non Gov Approved Schemes	8.49	0.10	0.10 RCD	No
E16 Corner (normal)	Non Gov Approved Schemes	10.40	0.05	0.05 RCD	No
E18 Party wall between dwellings	Non Gov Approved Schemes	10.40	0.04	0.04 RCD	No
P1 Party wall - Ground floor	Non Gov Approved Schemes	8.49	0.11	0.11 RCD	No
P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	8.49	0.00	9.01 Default	No
P4 Party wall - Roof (insulation at ceiling level)	Non Gov Approved Schemes	8.49	0.10	0.10 RCD	No

Y-value

0.04 W/m²K

18.0 Pressure Testing

Yes

Designed AP₅₀

4.50 m³/(h.m²) @ 50 Pa

Property Tested?

Yes

Test Method

Blower Door

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

No

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

No

22.0 Lighting

No Fixed Lighting

No

Name	Efficacy	Power	Capacity	Count
Lighting 1	75.00	10.00	750.00	20

24.0 Main Heating 1

Database

Percentage of Heat

100.00 %

Database Ref. No.

106467

Summary for Input Data

Fuel Type	Electricity
SAP Code	0
In Winter	349.04
In Summer	270.33
Model Name	EDLA04EV3
Manufacturer	Daikin Europe NV
System Type	Heat Pump
Controls SAP Code	2207
Delayed Start Stat	No
HETAS approved System	No
Oil Pump Inside	No
FI Case	0.00
Flue Type	None or Unknown
Fan Assisted Flue	No
Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators and Underfloor
Underfloor Heating	Yes - Pipes in thin screed
Flow Temperature	Enter value
Flow Temperature Value	35.00
Boiler Interlock	No
Combi boiler type	No Combi
Combi keep hot type	None

25.0 Main Heating 2

26.0 Heat Networks

	Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1	None									
Heat source 2	None									
Heat source 3	None									
Heat source 4	None									
Heat source 5	None									

28.0 Water Heating

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

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Shower 1	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

Hot Water Cylinder	Hot Water Cylinder	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	200.00	L
Loss	1.50	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	

31.0 Thermal Store

None

34.0 Small-scale Hydro

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

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

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None