



# Energy Statement

for

Four New Residential Units at

(Land North of 75) 77-83 Star Road

Caversham, Reading

Berkshire

RG4 5BE



| Version | Revision | Date            | Author | Reviewer |
|---------|----------|-----------------|--------|----------|
| 1       | -        | 28th April 2025 | RM     |          |
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## 1.0 Executive Summary

This building Energy Statement has been prepared to support the planning application for four new residential studios **on the land north of 75 Star Road, Caversham, Reading, Berkshire, RG4 5BE.**

This Energy & Sustainability Statement accompanies the planning application being submitted for the Development. It details how the buildings fabric and energy design will be developed within the context of the existing development policy requirements and demonstrate the ways in which these policy aims are being met.

It provides a detailed assessment of the predicted energy demand and CO<sup>2</sup> emissions for the dwelling. The report details those features of the design and specification that will be integrated within the development, along with low carbon technologies to contribute to effective energy demand reduction.

A technical assessment has been undertaken, using Elmhurst Design SAP10 (Standard Assessment Procedure; domestic energy demand model) for the dwelling.

In doing so this achieves a reduction in building regulated CO<sup>2</sup> emissions for the site and a reduction through the fabric improvements, beyond the requirements baseline.

These studios achieve compliance with Part L and SAP calculations achieving an 'as designed' EPC of **83B**.

Figure 1 – Proposed Elevation of the dwellings



## Introduction

This report supports the planning application for building four properties at **77-83 Star Road, Caversham, Reading, Berkshire, RG4 5BE**. It establishes the approach to the delivery of energy and sustainability proposals to meet the criteria outlined by Planning guidance and Building Regulations Part L.

It also provides an initial assessment of the predicted energy demand and CO<sub>2</sub> emission reduction for the development. In meeting these objectives, significant energy demand and CO<sub>2</sub> emission reductions will be achieved. Energy efficiency and low carbon energy measures are also examined in the context of planning and regulatory requirements.

The report outlines those features of the design and specification that will be integrated within the development, along with renewable energy technologies, to contribute to effective energy demand reduction of the development.

A technical assessment of the proposals has been undertaken, using Elmhurst Design SAP10 calculations (Standard Assessment Procedure; domestic energy demand model) to demonstrate how the energy demand and carbon dioxide emission reduction targets may be achieved. Calculations have been undertaken for all rooms.

The energy hierarchy reduces energy demand; then generates the energy in a clean and efficient manner and only then uses renewable energy sources.

The appraisal is based on approved calculation methodology and should not be understood as a predictive assessment, as occupants may operate their systems differently, and / or the weather may differ from the assumptions made within the calculations.

## 2.0 Location, Description & Accommodation

The dwellings will be four new build properties in Caversham, Reading. It is exciting build to be brought forward, which looks to deliver a number of striking two storey dwellings. The distinct character of the site and the area, creates a strong opportunity.

The location and orientation of the building is as shown over.



### 3.0 Planning Policy Regulations

Several policies and standards have been established to guide the building development towards significant energy demand and carbon dioxide emission reductions. These include planning policies, compliance standards within regulatory framework and sustainability assessment criteria.

The principal elements are reviewed below.

#### National Planning Policy

In addition to local planning policies, the National Planning Policy Framework (NPPF) 2012 is a material consideration. Published on 27th March 2012, and recently revised 20th July 2021, it replaces all previous PPSs and PPGs. The NPPF states that the planning system should play an active role in guiding development to sustainable solutions. There are three dimensions to sustainable development, as stated within the NPPF: economic, social, and environmental.

#### Economic Role

Contributing to building a strong, responsive, and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure.

#### Social Role

Supporting strong, vibrant, and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating a high-quality built environment, with accessible local services that reflect the community's needs and support its health, social and cultural well-being.

### Environmental Role

Contributing to protecting and enhancing our natural, built, and historic environment; and, as part of this, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and to mitigate and adapt to climate change including moving to a low carbon economy. These roles should not be undertaken in isolation, because they are mutually dependent. Economic growth can secure higher social and environmental standards and well-designed buildings and places can improve the lives of people and communities.

Therefore, to achieve sustainable development, economic, social, and environmental gains should be sought jointly and simultaneously through the planning system such as requirements for affordable housing, standards, infrastructure contributions or other requirements should, when taking account of the normal cost of development and mitigation, enable the development to be deliverable. At the heart of the National Planning Policy Framework is a presumption in favour of sustainable development - for decision-taking this means approving development proposals that accord with the development plan without delay.

### Local Planning Policy

The current Local Plan has numerous policies that help reduce carbon emissions across London and we have seen significant reductions in carbon emissions in London since 2005. However, these policies were set before the Climate Emergency declaration and are not aimed at meeting a net zero carbon aspiration by 2030.

#### London Plan 2021

This is the current policy context and establishes the following voluntary standards which are consistent with policies in the emerging Core Strategy .

The measures recommended in this SPD do not guarantee compliance with the Code for Sustainable Homes or BREEAM. They are a menu of good practice options that need to be considered for each development its merits alongside other design principles and guidance out in other SPD documents.

Development proposals should make the fullest contribution to minimising carbon dioxide emissions in accordance with the following energy hierarchy:

- 1) Be lean: use less energy
- 2) Be clean: supply energy efficiently
- 3) Be green: use renewable energy
- 4) Be seen: Monitor and report energy usage

## THE LONDON PLAN



THE SPATIAL DEVELOPMENT  
STRATEGY FOR GREATER LONDON  
**MARCH 2021**

the

on  
set

London Development Framework Climate Change and Design Supplementary Planning Document and Practice Guide Allied with the policy requirements of the BDP (TP1 to TP5), where viable and appropriate, the design of development must effectively incorporate measures and infrastructure to help create buildings and spaces that reduce their environmental burden; and the long term financial burden for occupiers. In seeking to achieve this, proposals must demonstrate they have integrated or considered the following within their design process:

- Energy efficiency - using technology, design elements and the site's characteristics to create thermally efficient buildings;
- Conserving water resources and maximising water efficiency - through water efficient infrastructure, harvesting of rainwater and use of greywater.
- Decentralised energy generation - install low -carbon decentralised energy infrastructure appropriate to the site and surroundings where viable;
- Building re -use and sustainable materials - utilising modular building methods, effectively integrating existing buildings into a scheme and using low carbon materials; and
- Climate change adaption - ensure landscapes, materials, façade treatments and infrastructure are appropriate to existing and future climate.

### Regulatory Framework

Building Regulations, revised 15th June 2022.

Part L - Conservation of Fuel and Power sets compliance standards for energy demand and carbon dioxide emissions from buildings. Approved Document L1A addresses the conservation of fuel and power in new buildings. The proposed development is registered against Building Regulations, Part L (2021), which requires all newly constructed buildings to comply with the five criteria set out in Approved Document L1A.

Approved Document L2A addresses the conservation of fuel and power in new buildings other than dwellings. The proposed development is registered against Building Regulations, Part L (2021), which requires all newly constructed buildings other than dwellings to comply with the five criteria set out in Approved Document L2A

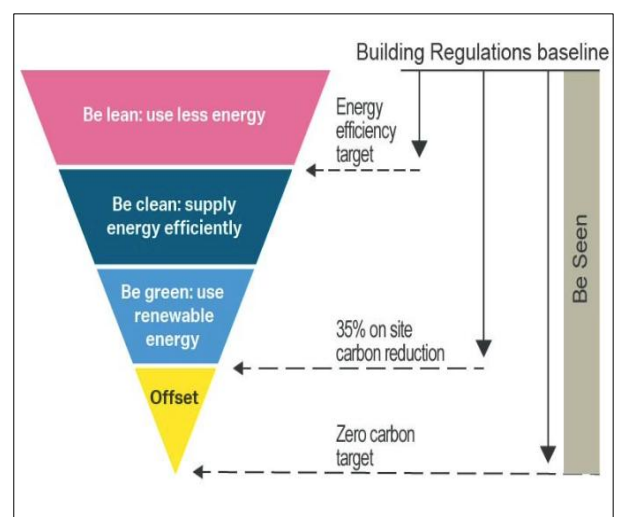
### 4.0 Energy Hierarchy

Energy and CO2 appraisal adopts the principles of the energy hierarchy to minimize carbon dioxide emissions. This means reducing greenhouse gas emissions in operation and minimising both annual and peak energy demand in accordance with the following energy hierarchy:

#### Be Lean

The be lean stage focuses on how sustainable and passive construction methods can be used to reduce energy use as far as reasonably practical. Passive design measures including betterment of limiting thermal performance and air permeability standards are a key part of this.

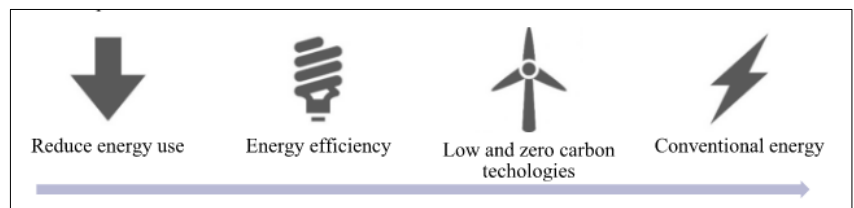
#### Be Clean



Supply energy efficiently more efficiently incorporating high efficiency equipment and low-carbon technologies where applicable to further reduce CO2 emissions. The use of equipment that consumes the minimum amount of energy during use and maximises heat recovery are considered.

### Be Green

Use of onsite renewable technologies to generate energy for use within the building to meet the local planning policy targets. Consideration is given to



what energy is used within the building and the most appropriate technology, considering the site constraints, to maximise how effective this is and ensure its efficient use within the building.

### Be Seen

Monitor, verify and report on energy performance.

### Strategy

The strategic approach to the design of the Development has been to reduce demand for energy prior to the consideration of integrating Low or Zero Carbon (LZC) technologies, since controlling demand is the most effective way of reducing energy requirements and CO2 emissions.

Further reductions are ensured through the specification of high efficiency building services to limit losses in energy supply, storage, and distribution.

After the inclusion of passive design and energy efficiency measures, various options have been investigated to reduce CO2 emissions associated with energy supply. The feasibility of LZC technologies has been investigated in line with the policy aspirations and as part of the Energy Strategy submitted in support of the application.

### Reading Borough Local Plan

The proposed development of four new build residential properties at **77-83 Star Road, Caversham, Reading, Berkshire, RG4 5BE**, falls within the policy framework of the Reading Borough Local Plan, which guides sustainable residential growth across the borough. The Local Plan seeks to ensure that new housing is appropriately located, sensitively designed, and contributes positively to the character and function of the local area.

Relevant policies applicable to this proposal include:

- **Policy H2 (Housing Development on Unallocated Sites):** Supports new residential development on suitable sites within the existing urban area, particularly where it helps meet identified housing needs and is compatible with the surrounding context.
- **Policy CC7 (Design and the Public Realm):** Requires all development to be of high-quality design, respecting and enhancing the character, scale, and setting of the surrounding area. New development should create an attractive, safe, and functional environment for residents and visitors.
- **Policy EN1 (Protection and Enhancement of the Historic Environment):** Recognises the importance of protecting and enhancing areas with historic or distinctive local character, such as Caversham. New

development must be sensitively designed to preserve the established identity of the area.

In addition, the development will comply with the Reading Borough Council's Residential Design Standards, ensuring that each dwelling provides high-quality internal living space, excellent access to natural light, and a comfortable, sustainable living environment for future occupiers.

## **5.0 Building Fabric & Energy Efficiency**

An enhanced 'fabric led' material specification and energy efficiency measures are reviewed below.

The standard measurement of heat transfer through a given building material or construction type is referred to as its U-value (W/m<sup>2</sup>K). The lower the U-value, the more slowly heat transfers through the thermal envelope of the building and is lost to the atmosphere.

In buildings, heat loss generally occurs through the following areas / elements of the construction including ground floor, external walls, roofs, doors and windows, thermal cold bridging (heat loss through construction joints) and uncontrolled air infiltration. The proposed material specification and design is outlined in table 2 over.

This fabric first approach follows a performance-based set of design criteria which help create buildings, which use less energy than standard UK buildings and seeks to limit the need for space heating and cooling. It is based on the principle that reducing heat loss to a minimum is the most cost-effective and most robust way of achieving a low carbon building within the UK. Instead of complicated design and expensive bolt-on renewables.

A fabric first approach design relies on a simple, fabric led solution to reducing a buildings energy demand, maximising the use of insulation and stringent airtightness standards and the removal of thermal bridges. The development will use high performance thermal insulation to limit heat loss through the main building elements.

For the purpose of this energy statement Part L 2021 U values have been adopted. These will be formalised through the building design development .

| Construction Element  | Specification                                       |
|-----------------------|-----------------------------------------------------|
| Wall (standard)       | U=0.18 W/m <sup>2</sup> K                           |
| Ground                | U=0.13 W/m <sup>2</sup> K                           |
| Roof                  | U=0.11 W/m <sup>2</sup> K                           |
| Glazing               | U=1.2 W/m <sup>2</sup> K (double glazed) G=0.63     |
| Frame Factor          | 0.7                                                 |
| Air Permeability      | 3 m <sup>3</sup> /hm <sup>2</sup> (@50Pa.)          |
| Ventilation           | Naturally Ventilated                                |
| Thermal Bridge        | Refer to specific Thermal Bridges section in report |
| Heating Control       | Programmre, Room Thermostat & TRVs                  |
| Main Heating          | Default Gas Boiler                                  |
| Water Heating         | Main Heating System                                 |
| Additional Renewables | Roof Mounted PV Panels                              |

Table 2 – Energy Hierarchy

A high air tightness is targeted for this building to limit uncontrolled air infiltration. This will significantly reduce heat losses and provide high levels of occupant comfort (in combination with the proposed mechanical ventilation strategy.) A focus on the construction details and the quality of the build is vital to deliver such air-tight buildings.

Thermal mass helps stabilise the internal temperature and provides a largely self-regulating environment, reducing the risk of overheating and the need for mechanical cooling in summer. Furthermore, this daily cycle of absorbing and releasing heat continues on a year-round basis and can reduce the energy needed to keep a heavyweight building warm during the heating season. This works through the ability of thermal mass to capture and recycle heat solar and incidental heat gains.

Attention to cold bridging junctions including the provision of insulation to limit heat transfer. The PSI value for each individual dwelling element will be calculated and applied within the SAP calculations that will form part of the Building Control submission post planning.

The following values from the Building Alliance Recognised Construction Details have been utilised:

- E7: Party Floor – 0.05 psi value (where applicable)
- E18: Party Wall – 0.06 psi value
- E2: Lintels – 0.2 psi value
- E3: Sill – 0.02 psi value
- E4: Jamb – 0.005 psi value
- E16: Corner – 0.09 psi value (where applicable)
- E17: Inverted Corner – 0.09 psi value (where applicable)
- E14: Flat Roof – 0 psi value (where applicable)

## 6.0 Energy Efficiency Measures

The proposed 100% low energy lighting provision and control systems for the space and water heating within the apartments will also ensure the energy consumed by the dwellings is used efficiently.

To improve the efficiency of the lighting systems all areas will be illuminated with LED fittings. Lighting control will include an intelligent lighting control system comprising passive detection and daylight detection.

External lighting will be switched by photocell and time clock with separate control for different lighting. Presence detection will be used within the common area lighting to minimum levels if unoccupied.

The proposed low energy lighting provision and control systems for the space and water heating will also ensure the energy consumed by the building is used efficiently, as per the second principle of the Energy Hierarchy. The energy uses have been critically assessed and the opportunities to decrease energy use and matching the remaining energy requirements with the most appropriate application.

## 7.0 Environmental Design

This dwelling type is an inherently efficient form of construction, both in terms of the materials required to build the dwelling and the on-going space heating energy demand. This is a result of relatively low areas of external heat loss elements associated with such layouts.

These factors combine to enhance the energy efficiency of the dwellings and low energy demand throughout their occupation.

The material specification and building construction methodology, which will be incorporated within this development provide the following benefits.

- Good levels of thermal insulation to reduce heat loss through external build elements.
- Highly efficient double-glazing units and insulated doors.
- Detailing to limit heat losses through thermal bridging; and
- Detailing to limit heat losses through air permeability.

Efficient servicing and automated controls will improve the efficiency of operation and optimise the occupant's comfort.

## 8.0 Water Demand Management

Water demand for the development will be managed and designed to reduce mains/potable water and include water efficient devices and equipment.

- A water efficiency strategy will be determined for the site to include 'A' rated appliances (where provided)
- Low flow taps/toilet/bath/showers will be specified throughout the development.

To reduce the demand, the sanitary fixtures will be specified to achieve a calculated daily consumption of less than 110 l/p/day in accordance with best practice.

## 9.0 Carbon Factors

Compliant CO2 emission factors were used to convert the energy requirement figures into CO2 emissions for the development.

### Energy Requirements and CO2 Emissions Appraisal

The following sections detail the passive design and energy efficiency measures that have been considered.

The following is an appraisal of the anticipated energy requirements and resultant CO2 emissions that are likely to arise because of the development, after the inclusion of the passive design and energy efficiency measures as previously described in this Energy Strategy.

The following sections detail the passive design and energy efficiency measures that have been considered and how these have been implemented at the development.

Passive design measures are those which reduce the energy demand within buildings and hence reduce both carbon emissions and energy use. Reducing the demand as a first step helps reduce the amount of work the building services systems within the building before examining the efficiency of the systems or the plant.

## 10.0 Energy Hierarchy

For development, the total Part L Fabric Energy Efficiency Standard (FEES) for the development should be upheld and the LETI 20230 Targets have been met.

**Be Lean**

The building fabric and air permeability have been maximised to limit the energy demand via the building fabric. The residential will achieve a reduction in CO<sub>2</sub> emissions beyond the Building Regulations Part L 2013 from passive design and energy efficiency measures.

| CO <sub>2</sub> Emissions | % Change |
|---------------------------|----------|
| Building Regulations      | -        |
| Be Lean                   | PASS     |

Table 4- Residential BE LEAN CO<sub>2</sub> Emissions**Be Clean**

The property is not located within an area served by district heating or any other centralized heating networks. As such, there are no available connections to district heating systems or similar services in the vicinity. Additionally, no plans exist for the installation of such infrastructure in the near future. The building's heating and energy systems are independently sourced, and there are no communal energy provisions available. Further savings and improvements in energy efficiency are achieved through the measures outlined in the 'Be Green' section of this statement, which focuses on sustainable energy solutions and reducing overall carbon emissions.

**Be Green**

The performance of the proposed systems has then been maximised to values beyond those within the Domestic Compliance Guide using best-in-class products a highly efficient PV panels to reduce the electrical load.

| CO <sub>2</sub> Emissions | % Change |
|---------------------------|----------|
| Building Regulations      | -        |
| Be Green & BeClean        | Pass     |

Table 5- Residential BE CLEAN & BE GREEN CO<sub>2</sub> Emissions**11.0 Cooling & Overheating**

A CIBSE TM59 Overheating Assessment is being undertaken for the development and in accordance with the new Part O building regulation.

Refer to separate TM59 Overheating Assessment report for further details.

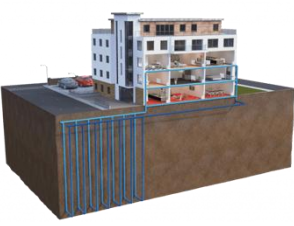
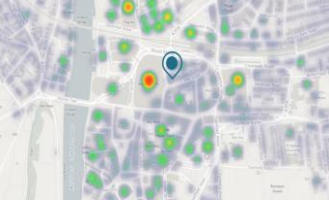
**12.0 Conclusion – Energy & CO<sub>2</sub> Emissions**

In conclusion, this energy statement demonstrates the property's adherence to energy efficiency and sustainability principles. The proposed measures have been designed to optimize energy consumption, reduce carbon emissions, and achieve cost savings, in line with current environmental standards and regulations. The detailed SAP results, compliance information, and Energy Performance Certificate (EPC) are included in the appendix for further reference.



## Appendix A – Appraisal of Different LZC Technology

|                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                          |
|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| <p>Photovoltaics (solar panels)</p>  | <p>Most effective on south facing orientations.<br/>Can be mounted on the roof ground or used as a cladding system. Low maintenance once installed.</p>                                                                                                                                                                                                                                                                                                                    | <p>Suited to this scale of development and proposed.</p> |
| <p>Solar Thermal</p>                 | <p>Most effective on south facing orientations.<br/>Available in a range of sizes. Best suited to individual buildings<br/>Low maintenance once installed.<br/>Evacuated tubes are more expensive than flat plate systems due to more advanced design</p>                                                                                                                                                                                                                  | <p>Not Suited to this Development Scale</p>              |
| <p>Biomass Heating</p>             | <p>Significant storage space is needed for the biomass chips or pellets.<br/>Reliability of fuel source would be a potential concern and additional boiler capacity is typically required for resilience doubling up on boiler capacity.<br/>Delivery of pellets/chips can cause dust and noise pollution with very significant delivery numbers.<br/>Maybe a conflict with smokeless zones.</p>                                                                           | <p>Not Suited to this Development</p>                    |
| <p>CHP</p>                         | <p>Most suitable for larger mixed-use schemes where there is a constant demand for electrical energy and heat. Used in association with conventional gas fired boilers.<br/>There is the potential to connect to wider district heating schemes.<br/>Requires a base heating load to operate economically and efficiently. A variable hot water load reduces the base load.<br/>Gas is less sustainable due to the ongoing decarbonisation of the mains electric grid.</p> | <p>Not Suited to this Development</p>                    |

|                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                           |
|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| <p>Wind Energy</p>              | <p>Large wind turbines not suitable for confined urban areas.</p> <p>The visual and noise impact on adjacent areas can be significant.</p> <p>Relatively high wind speeds needed so not suitable in built up city locations.</p>                                                                                                                                                                                                                                                                           | <p>Not suited to development due to site constraints</p>  |
| <p>Ground Source Heat Pump</p>  | <p>Can be laid horizontally or vertically as boreholes. The former only being suitable for non-commercial applications.</p> <p>Site constraints can conduce to boreholes or energy piles</p>                                                                                                                                                                                                                                                                                                               | <p>Not suited to development due to site constraints.</p> |
| <p>Air Source Heat Pumps</p>  | <p>Can be used where there is limited space and unsuitable ground conditions.</p> <p>Suitable for producing heating, cooling, and domestic hot water.</p> <p>The efficiency of heat pumps can be as high as 350% (COP of 3.5). Works most efficiently at lower temperatures necessitating larger pipe work, radiators to compensate for the lower water temperature.</p> <p>Typical ASHP systems have life spans of around 15 years.</p> <p>Noise from the condensers needs to be carefully considered</p> | <p>Suited to this Development and under consideration</p> |
| <p>District Heating</p>       | <p>The use of London's district heating network is currently unavailable for use by the Papa's Café development due to its location it cannot be considered for a possible new connection.</p>                                                                                                                                                                                                                                                                                                             | <p>Not Suited to this Development</p>                     |



# Predicted Energy Assessment



77 , Star Road, Caversham, Reading, Berkshire, RG4 5BE

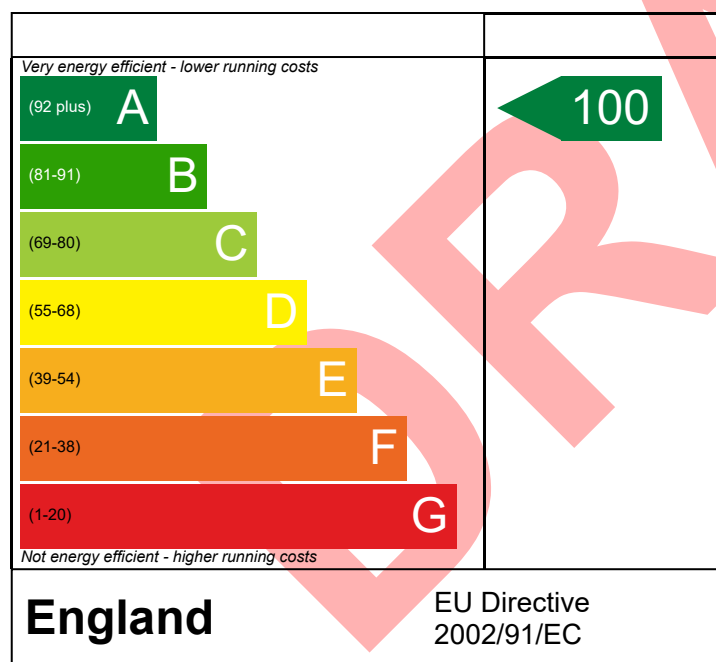
Dwelling type:  
Date of assessment:  
Produced by:  
Total floor area:  
DRRN:

House, End-Terrace  
27/04/2025  
Ruari Mulvenna  
138.1 m<sup>2</sup>

This document is a Predicted Energy Assessment for properties marketed when they are incomplete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, this rating will be updated and an official Energy Performance Certificate will be created for the property. This will include more detailed information about the energy performance of the completed property.

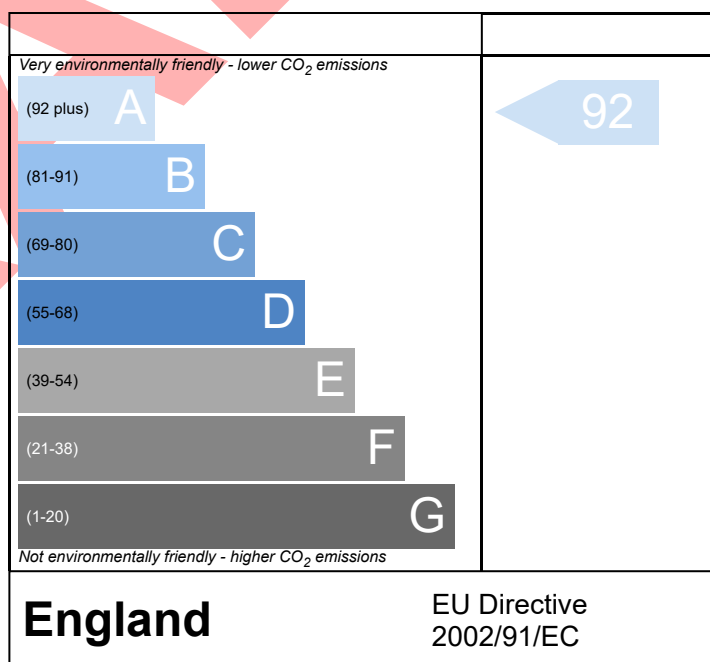
The energy performance has been assessed using the Government approved SAP 10 methodology and is rated in terms of the energy use per square meter of floor area; the energy efficiency is based on fuel costs and the environmental impact is based on carbon dioxide (CO<sub>2</sub>) emissions.

## Energy Efficiency Rating



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

## Environmental Impact (CO<sub>2</sub>) Rating



The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO<sub>2</sub>) emissions. The higher the rating the less impact it has on the environment.

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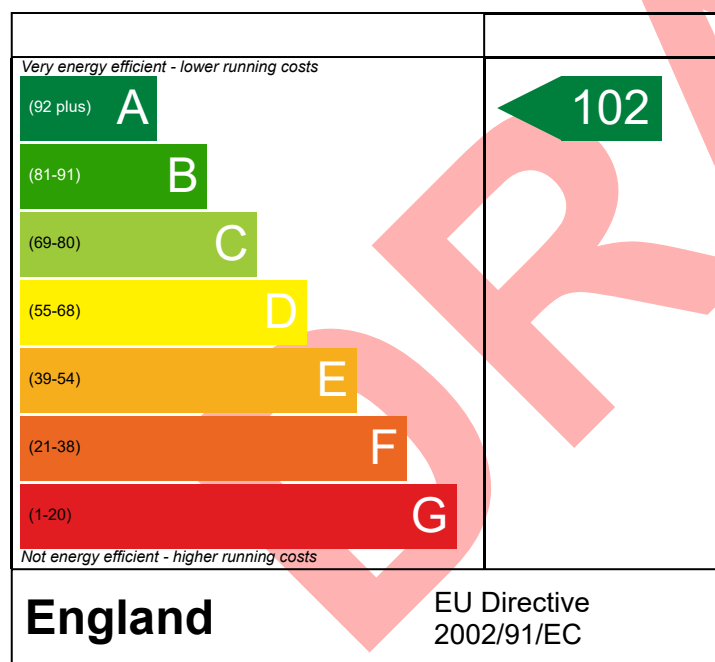
Dwelling type:  
Date of assessment:  
Produced by:  
Total floor area:  
DRRN:

House, Mid-Terrace  
27/04/2025  
Ruari Mulvenna  
114.5 m<sup>2</sup>

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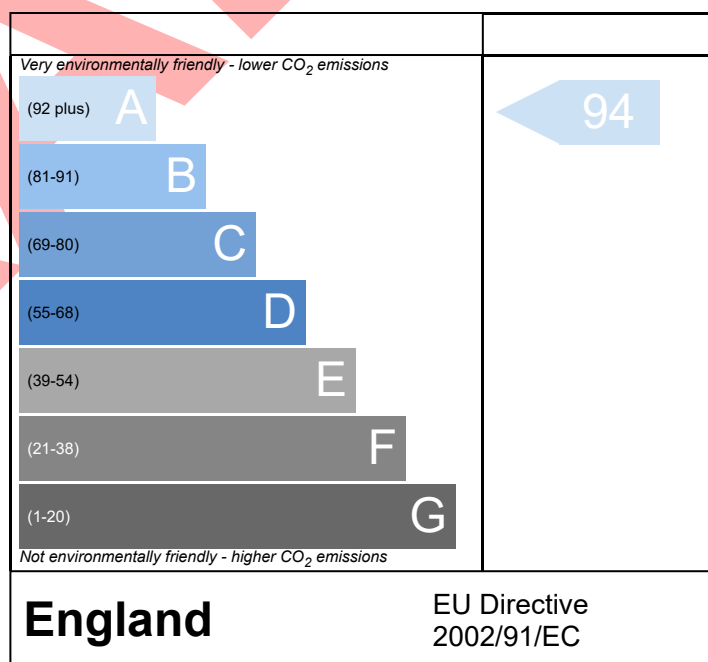
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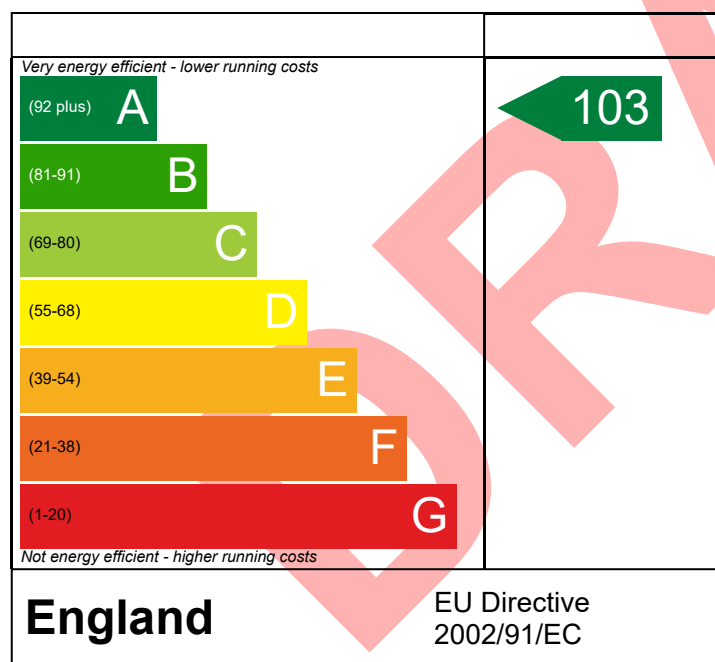
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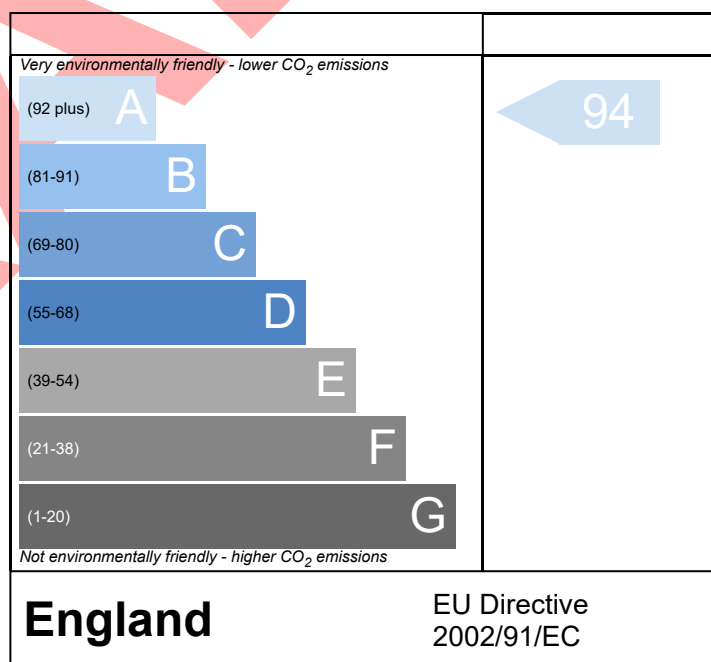
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# Predicted Energy Assessment



77 , Star Road, Caversham, Reading, Berkshire, RG4 5BE

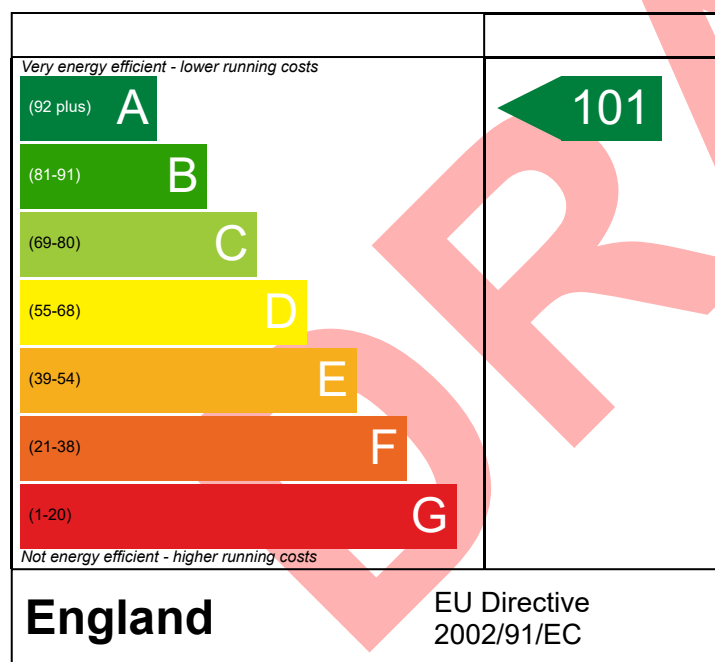
Dwelling type:  
Date of assessment:  
Produced by:  
Total floor area:  
DRRN:

House, Mid-Terrace  
27/04/2025  
Ruari Mulvenna  
114.5 m<sup>2</sup>

This document is a Predicted Energy Assessment for properties marketed when they are incomplete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, this rating will be updated and an official Energy Performance Certificate will be created for the property. This will include more detailed information about the energy performance of the completed property.

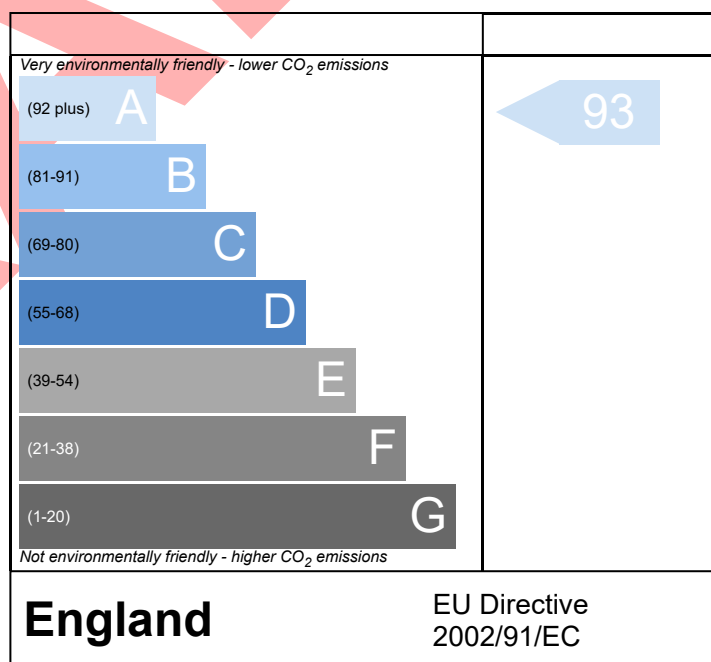
The energy performance has been assessed using the Government approved SAP 10 methodology and is rated in terms of the energy use per square meter of floor area; the energy efficiency is based on fuel costs and the environmental impact is based on carbon dioxide (CO<sub>2</sub>) emissions.

## Energy Efficiency Rating



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

## Environmental Impact (CO<sub>2</sub>) Rating



The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO<sub>2</sub>) emissions. The higher the rating the less impact it has on the environment.

# Summary for Input Data

|                      |                                                        |                |            |
|----------------------|--------------------------------------------------------|----------------|------------|
| Property Reference   | 77 Star Road                                           | Issued on Date | 27/04/2025 |
| Assessment Reference | 00001                                                  | Prop Type Ref  | 3B5P       |
| Property             | 77 , Star Road, Caversham, Reading, Berkshire, RG4 5BE |                |            |

|                                    |          |               |       |      |       |
|------------------------------------|----------|---------------|-------|------|-------|
| SAP Rating                         | 100 A    | DER           | 8.73  | TER  | 9.13  |
| Environmental                      | 92 A     | % DER < TER   |       |      | 4.38  |
| CO <sub>2</sub> Emissions (t/year) | 0.99     | DFEE          | 37.58 | TFEE | 38.35 |
| Compliance Check                   | See BREL | % DFEE < TFEE |       |      | 2.00  |
| % DPER < TPER                      | 2.42     | DPER          | 46.58 | TPER | 47.74 |

|                  |                    |             |           |
|------------------|--------------------|-------------|-----------|
| Assessor Details | Mr. Ruari Mulvenna | Assessor ID | AW51-0001 |
| Client           |                    |             |           |

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

|                                |                     |        |
|--------------------------------|---------------------|--------|
| Orientation                    | East                |        |
| Property Tenture               | ND                  |        |
| Transaction Type               | 6                   |        |
| Terrain Type                   | Suburban            |        |
| 1.0 Property Type              | House, End-Terrace  |        |
| Which Floor                    | 0                   |        |
| 2.0 Number of Storeys          | 3                   |        |
| 3.0 Date Built                 | 2025                |        |
| 3.0 Property Age Band          | L                   |        |
| 4.0 Sheltered Sides            | 2                   |        |
| 5.0 Sunlight/Shade             | Average or unknown  |        |
| 6.0 Thermal Mass Parameter     | Precise calculation |        |
| Thermal Mass                   | 104.34              | kJ/m²K |
|                                |                     |        |
| 7.0 Electricity Tariff         | Standard            |        |
| Smart electricity meter fitted | No                  |        |
| Smart gas meter fitted         | No                  |        |

| 7.0 Measurements | Heat Loss Perimeter | Internal Floor Area  | Average Storey Height |
|------------------|---------------------|----------------------|-----------------------|
| Basement:        | 22.50 m             | 46.80 m <sup>2</sup> | 2.40 m                |
| Ground floor:    | 32.00 m             | 74.50 m <sup>2</sup> | 2.40 m                |
| 1st Storey:      | 21.00 m             | 42.50 m <sup>2</sup> | 2.45 m                |
| 2nd Storey:      | 20.50 m             | 21.10 m <sup>2</sup> | 2.28 m                |

|                 |       |                |
|-----------------|-------|----------------|
| 8.0 Living Area | 39.00 | m <sup>2</sup> |
|-----------------|-------|----------------|

| 9.0 External Walls | Description    | Type        | Construction | U-Value (W/m <sup>2</sup> K) | Kappa (kJ/m <sup>2</sup> K) | Gross Area(m <sup>2</sup> ) | Nett Area (m <sup>2</sup> ) | Shelter Res | Shelter | Openings | Area Calculation Type |
|--------------------|----------------|-------------|--------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|-------------|---------|----------|-----------------------|
|                    | External Walls | Cavity Wall | Other        | 0.18                         | 9.00                        | 146.00                      | 117.20                      | 0.00        | None    | 28.80    | Enter Gross Area      |

| 9.1 Party Walls | Description | Type       | Construction | U-Value (W/m <sup>2</sup> K) | Kappa (kJ/m <sup>2</sup> K) | Area (m <sup>2</sup> ) | Shelter Res | Shelter |
|-----------------|-------------|------------|--------------|------------------------------|-----------------------------|------------------------|-------------|---------|
|                 | Party Walls | Solid Wall | Other        | 0.00                         | 20.00                       | 56.00                  | 0.00        | None    |

| 9.2 Internal Walls | Description     | Construction | Kappa (kJ/m <sup>2</sup> K) | Area (m <sup>2</sup> ) |
|--------------------|-----------------|--------------|-----------------------------|------------------------|
|                    | Internal Wall 1 | Other        | 9.00                        | 116.00                 |

| 10.0 External Roofs | Description      | Type                | Construction                  | U-Value (W/m <sup>2</sup> K) | Kappa (kJ/m <sup>2</sup> K) | Gross Area(m <sup>2</sup> ) | Nett Area (m <sup>2</sup> ) | Shelter Code | Shelter Factor | Calculation Type | Openings |
|---------------------|------------------|---------------------|-------------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|--------------|----------------|------------------|----------|
|                     | External Roof 01 | External Slope Roof | Plasterboard, insulated slope | 0.11                         | 9.00                        | 76.00                       | 76.00                       | None         | 0.00           | Enter Gross Area | 0.00     |

| 10.2 Internal Ceilings | Description         | Storey          | Construction                                   | Area (m <sup>2</sup> ) |
|------------------------|---------------------|-----------------|------------------------------------------------|------------------------|
|                        | Internal Ceiling GF | Lowest occupied | Plasterboard ceiling, carpeted chipboard floor | 74.00                  |

# Summary for Input Data

|                     |    |                                                |       |
|---------------------|----|------------------------------------------------|-------|
| Internal Ceiling 1F | +1 | Plasterboard ceiling, carpeted chipboard floor | 42.00 |
| Internal Ceiling 2F | +2 | Plasterboard ceiling, carpeted chipboard floor | 21.00 |

## 11.0 Heat Loss Floors

| Description     | Type                 | Storey Index    | Construction                           | U-Value (W/m²K) | Shelter Code | Shelter Factor | Kappa (kJ/m²K) | Area (m²) |
|-----------------|----------------------|-----------------|----------------------------------------|-----------------|--------------|----------------|----------------|-----------|
| Heatloss Floors | Ground Floor - Solid | Lowest occupied | Slab on ground, screed over insulation | 0.13            | None         | 0.00           | 110.00         | 74.00     |

## 11.2 Internal Floors

| Description       | Storey Index | Construction                                   | Kappa (kJ/m²K) | Area (m²) |
|-------------------|--------------|------------------------------------------------|----------------|-----------|
| Internal Floor 2F |              | Other                                          | 18.00          | 21.00     |
| Internal Floor 1F |              | Plasterboard ceiling, carpeted chipboard floor | 9.00           | 42.00     |

## 12.0 Opening Types

| Description  | Data Source  | Type       | Glazing                | Glazing Gap | Filling Type | G-value | Frame Type | Frame Factor | U Value (W/m²K) |
|--------------|--------------|------------|------------------------|-------------|--------------|---------|------------|--------------|-----------------|
| Front Door   | Manufacturer | Solid Door |                        |             |              | 0.00    |            |              | 1.00            |
| Glazing      | Manufacturer | Window     | Double Low-E Soft 0.05 |             |              | 0.63    |            | 0.70         | 1.20            |
| Roof Glazing | Manufacturer | Roof Light | Double Low-E Soft 0.05 |             |              | 0.63    |            | 0.70         | 1.20            |

## 13.0 Openings

| Name                      | Opening Type | Location       | Orientation | Area (m²) | Pitch |
|---------------------------|--------------|----------------|-------------|-----------|-------|
| 01 Front Door             | Front Door   | External Walls | East        | 1.95      | 0     |
| 01 Glazing Front          | Glazing      | External Walls | East        | 4.80      | 0     |
| 02 Glazing Side / BiDoors | Glazing      | External Walls | North West  | 7.50      | 0     |
| 02 Glazing Rear           | Glazing      | External Walls | West        | 4.80      | 0     |
| 02 Glazing Rear BiDoors   | Glazing      | External Walls | West        | 9.75      | 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 |
|--------------------------------------------------|--------------------------|--------|------|---------------------|----------|
| E1 Steel lintel with perforated steel base plate | Non Gov Approved Schemes | 13.00  | 0.10 | 0.10                | No       |
| E3 Sill                                          | Non Gov Approved Schemes | 12.20  | 0.03 | 0.03                | No       |
| E4 Jamb                                          | Gov Approved Scheme      | 26.20  | 0.04 | 0.04                | No       |
| E5 Ground floor (normal)                         | Non Gov Approved Schemes | 19.46  | 0.14 | 0.14                | No       |
| E6 Intermediate floor within a dwelling          | Non Gov Approved Schemes | 39.57  | 0.08 | 0.08                | No       |
| E18 Party wall between dwellings                 | Non Gov Approved Schemes | 30.52  | 0.02 | 0.02                | No       |
| E16 Corner (normal)                              | Non Gov Approved Schemes | 23.80  | 0.06 | 0.06                | No       |
| E10 Eaves (insulation at ceiling level)          | Gov Approved Scheme      | 39.50  | 0.06 | 0.06                | No       |
| R7 Flat ceiling (inverted)                       | Non Gov Approved Schemes | 14.52  | 0.06 | 0.06                | No       |

Y-value  W/m²K

## 19.0 Mechanical Ventilation

### Mechanical Ventilation

Mechanical Ventilation System Present

## 20.0 Fans, Open Fireplaces, Flues

Number of open chimneys

Number of open flues

Number of chimneys/flues attached to closed fire

Number of flues attached to solid fuel boiler

Number of flues attached to other heater

Number of blocked chimneys

Number of intermittent extract fans

Number of passive vents

Number of flueless gas fires

## 21.0 Fixed Cooling System

## 22.0 Pressure Testing

Designed AP<sub>50</sub>  m³/(h.m²) @ 50 Pa

Property Tested?

Test Method

## 22.0 Lighting

# Summary for Input Data

| No Fixed Lighting                                | No                       | Name<br>Lighting | Efficacy<br>370.00 | Power<br>10.00 | Capacity<br>3700.00 | Count<br>16 |
|--------------------------------------------------|--------------------------|------------------|--------------------|----------------|---------------------|-------------|
| <b>24.0 Main Heating 1</b>                       | Database                 |                  |                    |                |                     |             |
| Percentage of Heat                               | 100.00                   |                  |                    |                | %                   |             |
| Database Ref. No.                                | 18821                    |                  |                    |                |                     |             |
| Fuel Type                                        | Mains gas                |                  |                    |                |                     |             |
| SAP Code                                         | 0                        |                  |                    |                |                     |             |
| In Winter                                        | 83.40                    |                  |                    |                |                     |             |
| In Summer                                        | 88.00                    |                  |                    |                |                     |             |
| Model Name                                       | Greenstar 2000           |                  |                    |                |                     |             |
| Manufacturer                                     | Bosch Thermotechnology   |                  |                    |                |                     |             |
| System Type                                      | Combi boiler             |                  |                    |                |                     |             |
| Controls SAP Code                                | 2110                     |                  |                    |                |                     |             |
| Delayed Start Stat                               | No                       |                  |                    |                |                     |             |
| Burner Control                                   | Modulating               |                  |                    |                |                     |             |
| HETAS approved System                            | No                       |                  |                    |                |                     |             |
| Flue Type                                        | Balanced                 |                  |                    |                |                     |             |
| Fan Assisted Flue                                | Yes                      |                  |                    |                |                     |             |
| Is MHS Pumped                                    | Pump in heated space     |                  |                    |                |                     |             |
| Heating Pump Age                                 | 2013 or later            |                  |                    |                |                     |             |
| Heat Emitter                                     | Radiators and Underfloor |                  |                    |                |                     |             |
| Underfloor Heating                               | Yes - Pipes in Concrete  |                  |                    |                |                     |             |
| Flow Temperature                                 | Unknown                  |                  |                    |                |                     |             |
| Boiler Interlock                                 | No                       |                  |                    |                |                     |             |
| Combi boiler type                                | Standard Combi           |                  |                    |                |                     |             |
| <b>25.0 Main Heating 2</b>                       | None                     |                  |                    |                |                     |             |
| <b>26.0 Heat Networks</b>                        | None                     |                  |                    |                |                     |             |
| <b>27.0 Secondary Heating</b>                    | None                     |                  |                    |                |                     |             |
| <b>28.0 Water Heating</b>                        | Main Heating 1           |                  |                    |                |                     |             |
| Water Heating                                    | 901                      |                  |                    |                |                     |             |
| SAP Code                                         | No                       |                  |                    |                |                     |             |
| Flue Gas Heat Recovery System                    | No                       |                  |                    |                |                     |             |
| Waste Water Heat Recovery Instantaneous System 1 | No                       |                  |                    |                |                     |             |
| Waste Water Heat Recovery Instantaneous System 2 | No                       |                  |                    |                |                     |             |
| Waste Water Heat Recovery Storage System         | No                       |                  |                    |                |                     |             |
| Solar Panel                                      | No                       |                  |                    |                |                     |             |
| Water use <= 125 litres/person/day               | Yes                      |                  |                    |                |                     |             |
| Summer Immersion                                 | No                       |                  |                    |                |                     |             |
| Cold Water Source                                | From mains               |                  |                    |                |                     |             |
| Bath Count                                       | 1                        |                  |                    |                |                     |             |
| Supplementary Immersion                          | No                       |                  |                    |                |                     |             |
| Immersion Only Heating Hot Water                 | No                       |                  |                    |                |                     |             |
| <b>28.3 Waste Water Heat Recovery System</b>     |                          |                  |                    |                |                     |             |
| <b>29.0 Hot Water Cylinder</b>                   | None                     |                  |                    |                |                     |             |
| Cylinder Stat                                    | No                       |                  |                    |                |                     |             |
| Cylinder In Heated Space                         | No                       |                  |                    |                |                     |             |

# Summary for Input Data

Independent Time Control

In Airing Cupboard

**31.0 Thermal Store**

**32.0 Photovoltaic Unit**

Export Capable Meter?

Connected To Dwelling

Diverter

Battery Capacity [kWh]

| PV Cells kWp | Orientation | Elevation | Overshading    | FGHRS | MCS Certificate | Overshading Factor | MCS Certificate Reference | Panel Manufacturer |
|--------------|-------------|-----------|----------------|-------|-----------------|--------------------|---------------------------|--------------------|
| 7.20         | West        | 30°       | None Or Little | No    | No              | 1.00               |                           |                    |

**34.0 Small-scale Hydro**

Electricity Generated

Apportioned  kWh/Year

Connected to dwelling's electricity meter

Electricity Generation

| 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   | 79 Star Road                                           | Issued on Date | 27/04/2025 |
| Assessment Reference | 00001                                                  | Prop Type Ref  | 3B5P       |
| Property             | 77 , Star Road, Caversham, Reading, Berkshire, RG4 5BE |                |            |

|                                    |          |               |       |      |       |
|------------------------------------|----------|---------------|-------|------|-------|
| SAP Rating                         | 102 A    | DER           | 6.67  | TER  | 9.43  |
| Environmental                      | 94 A     | % DER < TER   |       |      | 29.27 |
| CO <sub>2</sub> Emissions (t/year) | 0.59     | DFEE          | 31.56 | TFEE | 32.37 |
| Compliance Check                   | See BREL | % DFEE < TFEE |       |      | 2.49  |
| % DPER < TPER                      | 26.49    | DPER          | 36.10 | TPER | 49.11 |

|                  |                    |             |           |
|------------------|--------------------|-------------|-----------|
| Assessor Details | Mr. Ruari Mulvenna | Assessor ID | AW51-0001 |
| Client           |                    |             |           |

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

|                                |                     |        |
|--------------------------------|---------------------|--------|
| Orientation                    | East                |        |
| Property Tenture               | ND                  |        |
| Transaction Type               | 6                   |        |
| Terrain Type                   | Suburban            |        |
| 1.0 Property Type              | House, Mid-Terrace  |        |
| Which Floor                    | 0                   |        |
| 2.0 Number of Storeys          | 3                   |        |
| 3.0 Date Built                 | 2025                |        |
| 3.0 Property Age Band          | L                   |        |
| 4.0 Sheltered Sides            | 2                   |        |
| 5.0 Sunlight/Shade             | Average or unknown  |        |
| 6.0 Thermal Mass Parameter     | Precise calculation |        |
| Thermal Mass                   | 106.32              | kJ/m²K |
|                                |                     |        |
| 7.0 Electricity Tariff         | Standard            |        |
| Smart electricity meter fitted | No                  |        |
| Smart gas meter fitted         | No                  |        |

| 7.0 Measurements | Heat Loss Perimeter | Internal Floor Area  | Average Storey Height |
|------------------|---------------------|----------------------|-----------------------|
| Basement:        | 22.50 m             | 46.80 m <sup>2</sup> | 2.40 m                |
| Ground floor:    | 32.00 m             | 52.00 m <sup>2</sup> | 2.40 m                |
| 1st Storey:      | 21.00 m             | 42.00 m <sup>2</sup> | 2.45 m                |
| 2nd Storey:      | 20.50 m             | 20.50 m <sup>2</sup> | 2.28 m                |

|                 |       |                |
|-----------------|-------|----------------|
| 8.0 Living Area | 37.00 | m <sup>2</sup> |
|-----------------|-------|----------------|

| 9.0 External Walls | Description    | Type        | Construction | U-Value (W/m <sup>2</sup> K) | Kappa (kJ/m <sup>2</sup> K) | Gross Area(m <sup>2</sup> ) | Nett Area (m <sup>2</sup> ) | Shelter Res | Shelter | Openings | Area Calculation Type |
|--------------------|----------------|-------------|--------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|-------------|---------|----------|-----------------------|
|                    | External Walls | Cavity Wall | Other        | 0.18                         | 9.00                        | 74.00                       | 56.15                       | 0.00        | None    | 17.85    | Enter Gross Area      |

| 9.1 Party Walls | Description | Type       | Construction | U-Value (W/m <sup>2</sup> K) | Kappa (kJ/m <sup>2</sup> K) | Area (m <sup>2</sup> ) | Shelter Res | Shelter |
|-----------------|-------------|------------|--------------|------------------------------|-----------------------------|------------------------|-------------|---------|
|                 | Party Walls | Solid Wall | Other        | 0.00                         | 20.00                       | 112.00                 | 0.00        | None    |

| 9.2 Internal Walls | Description     | Construction | Kappa (kJ/m <sup>2</sup> K) | Area (m <sup>2</sup> ) |
|--------------------|-----------------|--------------|-----------------------------|------------------------|
|                    | Internal Wall 1 | Other        | 9.00                        | 116.00                 |

| 10.0 External Roofs | Description      | Type                | Construction                  | U-Value (W/m <sup>2</sup> K) | Kappa (kJ/m <sup>2</sup> K) | Gross Area(m <sup>2</sup> ) | Nett Area (m <sup>2</sup> ) | Shelter Code | Shelter Factor | Calculation Type | Openings |
|---------------------|------------------|---------------------|-------------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|--------------|----------------|------------------|----------|
|                     | External Roof 01 | External Slope Roof | Plasterboard, insulated slope | 0.11                         | 9.00                        | 58.00                       | 58.00                       | None         | 0.00           | Enter Gross Area | 0.00     |

| 10.2 Internal Ceilings | Description         | Storey          | Construction                                   | Area (m <sup>2</sup> ) |
|------------------------|---------------------|-----------------|------------------------------------------------|------------------------|
|                        | Internal Ceiling GF | Lowest occupied | Plasterboard ceiling, carpeted chipboard floor | 52.00                  |

# Summary for Input Data

|                     |    |                                                |       |
|---------------------|----|------------------------------------------------|-------|
| Internal Ceiling 1F | +1 | Plasterboard ceiling, carpeted chipboard floor | 42.00 |
| Internal Ceiling 2F | +2 | Plasterboard ceiling, carpeted chipboard floor | 20.00 |

## 11.0 Heat Loss Floors

| Description     | Type                 | Storey Index    | Construction                           | U-Value (W/m²K) | Shelter Code | Shelter Factor | Kappa (kJ/m²K) | Area (m²) |
|-----------------|----------------------|-----------------|----------------------------------------|-----------------|--------------|----------------|----------------|-----------|
| Heatloss Floors | Ground Floor - Solid | Lowest occupied | Slab on ground, screed over insulation | 0.13            | None         | 0.00           | 110.00         | 52.00     |

## 11.2 Internal Floors

| Description       | Storey Index | Construction                                   | Kappa (kJ/m²K) | Area (m²) |
|-------------------|--------------|------------------------------------------------|----------------|-----------|
| Internal Floor 2F |              | Other                                          | 18.00          | 20.00     |
| Internal Floor 1F |              | Plasterboard ceiling, carpeted chipboard floor | 9.00           | 42.00     |

## 12.0 Opening Types

| Description  | Data Source  | Type       | Glazing                | Glazing Gap | Filling Type | G-value | Frame Type | Frame Factor | U Value (W/m²K) |
|--------------|--------------|------------|------------------------|-------------|--------------|---------|------------|--------------|-----------------|
| Front Door   | Manufacturer | Solid Door |                        |             |              | 0.00    |            |              | 1.00            |
| Glazing      | Manufacturer | Window     | Double Low-E Soft 0.05 |             |              | 0.63    |            | 0.70         | 1.20            |
| Roof Glazing | Manufacturer | Roof Light | Double Low-E Soft 0.05 |             |              | 0.63    |            | 0.70         | 1.20            |

## 13.0 Openings

| Name                    | Opening Type | Location       | Orientation | Area (m²) | Pitch |
|-------------------------|--------------|----------------|-------------|-----------|-------|
| 01 Front Door           | Front Door   | External Walls | East        | 1.95      | 0     |
| 01 Glazing Front        | Glazing      | External Walls | East        | 4.80      | 0     |
| 02 Glazing Rear         | Glazing      | External Walls | West        | 4.80      | 0     |
| 02 Glazing Rear BiDoors | Glazing      | External Walls | West        | 6.30      | 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 |
|--------------------------------------------------|--------------------------|--------|------|---------------------|----------|
| E1 Steel lintel with perforated steel base plate | Non Gov Approved Schemes | 13.00  | 0.10 | 0.10                | No       |
| E3 Sill                                          | Non Gov Approved Schemes | 12.20  | 0.03 | 0.03                | No       |
| E4 Jamb                                          | Gov Approved Scheme      | 26.20  | 0.04 | 0.04                | No       |
| E5 Ground floor (normal)                         | Non Gov Approved Schemes | 19.46  | 0.14 | 0.14                | No       |
| E6 Intermediate floor within a dwelling          | Non Gov Approved Schemes | 39.57  | 0.08 | 0.08                | No       |
| E18 Party wall between dwellings                 | Non Gov Approved Schemes | 30.52  | 0.02 | 0.02                | No       |
| E16 Corner (normal)                              | Non Gov Approved Schemes | 23.80  | 0.06 | 0.06                | No       |
| E10 Eaves (insulation at ceiling level)          | Gov Approved Scheme      | 39.50  | 0.06 | 0.06                | No       |
| R7 Flat ceiling (inverted)                       | Non Gov Approved Schemes | 14.52  | 0.06 | 0.06                | No       |

Y-value  W/m²K

## 19.0 Mechanical Ventilation

### Mechanical Ventilation

Mechanical Ventilation System Present

## 20.0 Fans, Open Fireplaces, Flues

Number of open chimneys

Number of open flues

Number of chimneys/flues attached to closed fire

Number of flues attached to solid fuel boiler

Number of flues attached to other heater

Number of blocked chimneys

Number of intermittent extract fans

Number of passive vents

Number of flueless gas fires

## 21.0 Fixed Cooling System

## 22.0 Pressure Testing

Designed AP<sub>50</sub>  m³/(h.m²) @ 50 Pa

Property Tested?

Test Method

## 22.0 Lighting

No Fixed Lighting

# Summary for Input Data

|                                                  | Name                     | Efficacy | Power | Capacity | Count |
|--------------------------------------------------|--------------------------|----------|-------|----------|-------|
|                                                  | Lighting                 | 370.00   | 10.00 | 3700.00  | 16    |
| <b>24.0 Main Heating 1</b>                       | Database                 |          |       |          |       |
| Percentage of Heat                               | 100.00                   |          |       | %        |       |
| Database Ref. No.                                | 18821                    |          |       |          |       |
| Fuel Type                                        | Mains gas                |          |       |          |       |
| SAP Code                                         | 0                        |          |       |          |       |
| In Winter                                        | 83.40                    |          |       |          |       |
| In Summer                                        | 88.00                    |          |       |          |       |
| Model Name                                       | Greenstar 2000           |          |       |          |       |
| Manufacturer                                     | Bosch Thermotechnology   |          |       |          |       |
| System Type                                      | Combi boiler             |          |       |          |       |
| Controls SAP Code                                | 2110                     |          |       |          |       |
| Delayed Start Stat                               | No                       |          |       |          |       |
| Burner Control                                   | Modulating               |          |       |          |       |
| HETAS approved System                            | No                       |          |       |          |       |
| Flue Type                                        | Balanced                 |          |       |          |       |
| Fan Assisted Flue                                | Yes                      |          |       |          |       |
| Is MHS Pumped                                    | Pump in heated space     |          |       |          |       |
| Heating Pump Age                                 | 2013 or later            |          |       |          |       |
| Heat Emitter                                     | Radiators and Underfloor |          |       |          |       |
| Underfloor Heating                               | Yes - Pipes in Concrete  |          |       |          |       |
| Flow Temperature                                 | Unknown                  |          |       |          |       |
| Boiler Interlock                                 | No                       |          |       |          |       |
| Combi boiler type                                | Standard Combi           |          |       |          |       |
| <b>25.0 Main Heating 2</b>                       | None                     |          |       |          |       |
| <b>26.0 Heat Networks</b>                        | None                     |          |       |          |       |
| <b>27.0 Secondary Heating</b>                    | None                     |          |       |          |       |
| <b>28.0 Water Heating</b>                        |                          |          |       |          |       |
| Water Heating                                    | Main Heating 1           |          |       |          |       |
| SAP Code                                         | 901                      |          |       |          |       |
| Flue Gas Heat Recovery System                    | No                       |          |       |          |       |
| Waste Water Heat Recovery Instantaneous System 1 | No                       |          |       |          |       |
| Waste Water Heat Recovery Instantaneous System 2 | No                       |          |       |          |       |
| Waste Water Heat Recovery Storage System         | No                       |          |       |          |       |
| Solar Panel                                      | No                       |          |       |          |       |
| Water use <= 125 litres/person/day               | Yes                      |          |       |          |       |
| Summer Immersion                                 | No                       |          |       |          |       |
| Cold Water Source                                | From mains               |          |       |          |       |
| Bath Count                                       | 1                        |          |       |          |       |
| Supplementary Immersion                          | No                       |          |       |          |       |
| Immersion Only Heating Hot Water                 | No                       |          |       |          |       |
| <b>28.3 Waste Water Heat Recovery System</b>     |                          |          |       |          |       |
| <b>29.0 Hot Water Cylinder</b>                   | None                     |          |       |          |       |
| Cylinder Stat                                    | No                       |          |       |          |       |
| Cylinder In Heated Space                         | No                       |          |       |          |       |
| Independent Time Control                         | No                       |          |       |          |       |

# Summary for Input Data

In Airing Cupboard

No

## 31.0 Thermal Store

None

## 32.0 Photovoltaic Unit

One Dwelling

Export Capable Meter?

Yes

Connected To Dwelling

Yes

Diverter

No

Battery Capacity [kWh]

0.00

**PV Cells kWp**

**Orientation**

**Elevation**

**Overshading FGHRs**

**MCS Certificate**

**Overshading Factor**

**MCS Certificate Reference**

**Panel Manufacturer**

7.20

West

30°

None Or Little No

No

1.00

## 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   | 81 Star Road                                           | Issued on Date | 27/04/2025 |
| Assessment Reference | 00001                                                  | Prop Type Ref  | 3B5P       |
| Property             | 77 , Star Road, Caversham, Reading, Berkshire, RG4 5BE |                |            |

|                                    |          |               |       |      |       |
|------------------------------------|----------|---------------|-------|------|-------|
| SAP Rating                         | 103 A    | DER           | 6.72  | TER  | 9.84  |
| Environmental                      | 94 A     | % DER < TER   |       |      | 31.71 |
| CO <sub>2</sub> Emissions (t/year) | 0.57     | DFEE          | 32.13 | TFEE | 32.94 |
| Compliance Check                   | See BREL | % DFEE < TFEE |       |      | 2.44  |
| % DPER < TPER                      | 28.88    | DPER          | 36.46 | TPER | 51.27 |

|                  |                    |             |           |
|------------------|--------------------|-------------|-----------|
| Assessor Details | Mr. Ruari Mulvenna | Assessor ID | AW51-0001 |
| Client           |                    |             |           |

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

|                                |                            |
|--------------------------------|----------------------------|
| Orientation                    | East                       |
| Property Tenure                | ND                         |
| Transaction Type               | 6                          |
| Terrain Type                   | Suburban                   |
| 1.0 Property Type              | House, Mid-Terrace         |
| Which Floor                    | 0                          |
| 2.0 Number of Storeys          | 3                          |
| 3.0 Date Built                 | 2025                       |
| 3.0 Property Age Band          | L                          |
| 4.0 Sheltered Sides            | 2                          |
| 5.0 Sunlight/Shade             | Average or unknown         |
| 6.0 Thermal Mass Parameter     | Precise calculation        |
| Thermal Mass                   | 109.84 kJ/m <sup>2</sup> K |
| 7.0 Electricity Tariff         | Standard                   |
| Smart electricity meter fitted | No                         |
| Smart gas meter fitted         | No                         |

| 7.0 Measurements | Heat Loss Perimeter | Internal Floor Area  | Average Storey Height |
|------------------|---------------------|----------------------|-----------------------|
| Basement:        | 22.50 m             | 46.80 m <sup>2</sup> | 2.40 m                |
| Ground floor:    | 32.00 m             | 48.00 m <sup>2</sup> | 2.40 m                |
| 1st Storey:      | 21.00 m             | 42.00 m <sup>2</sup> | 2.45 m                |
| 2nd Storey:      | 20.50 m             | 20.50 m <sup>2</sup> | 2.28 m                |

|                 |                      |
|-----------------|----------------------|
| 8.0 Living Area | 34.00 m <sup>2</sup> |
|-----------------|----------------------|

| 9.0 External Walls | Description    | Type        | Construction | U-Value (W/m <sup>2</sup> K) | Kappa (kJ/m <sup>2</sup> K) | Gross Area(m <sup>2</sup> ) | Nett Area (m <sup>2</sup> ) | Shelter Res | Shelter | Openings | Area Calculation Type |
|--------------------|----------------|-------------|--------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|-------------|---------|----------|-----------------------|
|                    | External Walls | Cavity Wall | Other        | 0.18                         | 9.00                        | 74.00                       | 56.15                       | 0.00        | None    | 17.85    | Enter Gross Area      |

| 9.1 Party Walls | Description | Type       | Construction | U-Value (W/m <sup>2</sup> K) | Kappa (kJ/m <sup>2</sup> K) | Area (m <sup>2</sup> ) | Shelter Res | Shelter |
|-----------------|-------------|------------|--------------|------------------------------|-----------------------------|------------------------|-------------|---------|
|                 | Party Walls | Solid Wall | Other        | 0.00                         | 20.00                       | 112.00                 | 0.00        | None    |

| 9.2 Internal Walls | Description     | Construction | Kappa (kJ/m <sup>2</sup> K) | Area (m <sup>2</sup> ) |
|--------------------|-----------------|--------------|-----------------------------|------------------------|
|                    | Internal Wall 1 | Other        | 9.00                        | 116.00                 |

| 10.0 External Roofs | Description      | Type                | Construction                  | U-Value (W/m <sup>2</sup> K) | Kappa (kJ/m <sup>2</sup> K) | Gross Area(m <sup>2</sup> ) | Nett Area (m <sup>2</sup> ) | Shelter Code | Shelter Factor | Calculation Type | Openings |
|---------------------|------------------|---------------------|-------------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|--------------|----------------|------------------|----------|
|                     | External Roof 01 | External Slope Roof | Plasterboard, insulated slope | 0.11                         | 9.00                        | 58.00                       | 58.00                       | None         | 0.00           | Enter Gross Area | 0.00     |

| 10.2 Internal Ceilings | Description         | Storey          | Construction                                   | Area (m <sup>2</sup> ) |
|------------------------|---------------------|-----------------|------------------------------------------------|------------------------|
|                        | Internal Ceiling GF | Lowest occupied | Plasterboard ceiling, carpeted chipboard floor | 48.00                  |

# Summary for Input Data

|                     |    |                                                |       |
|---------------------|----|------------------------------------------------|-------|
| Internal Ceiling 1F | +1 | Plasterboard ceiling, carpeted chipboard floor | 42.00 |
| Internal Ceiling 2F | +2 | Plasterboard ceiling, carpeted chipboard floor | 20.00 |

## 11.0 Heat Loss Floors

| Description     | Type                 | Storey Index    | Construction                           | U-Value (W/m²K) | Shelter Code | Shelter Factor | Kappa (kJ/m²K) | Area (m²) |
|-----------------|----------------------|-----------------|----------------------------------------|-----------------|--------------|----------------|----------------|-----------|
| Heatloss Floors | Ground Floor - Solid | Lowest occupied | Slab on ground, screed over insulation | 0.13            | None         | 0.00           | 110.00         | 52.00     |

## 11.2 Internal Floors

| Description       | Storey Index | Construction                                   | Kappa (kJ/m²K) | Area (m²) |
|-------------------|--------------|------------------------------------------------|----------------|-----------|
| Internal Floor 2F |              | Other                                          | 18.00          | 20.00     |
| Internal Floor 1F |              | Plasterboard ceiling, carpeted chipboard floor | 9.00           | 42.00     |

## 12.0 Opening Types

| Description  | Data Source  | Type       | Glazing                | Glazing Gap | Filling Type | G-value | Frame Type | Frame Factor | U Value (W/m²K) |
|--------------|--------------|------------|------------------------|-------------|--------------|---------|------------|--------------|-----------------|
| Front Door   | Manufacturer | Solid Door |                        |             |              | 0.00    |            |              | 1.00            |
| Glazing      | Manufacturer | Window     | Double Low-E Soft 0.05 |             |              | 0.63    |            | 0.70         | 1.20            |
| Roof Glazing | Manufacturer | Roof Light | Double Low-E Soft 0.05 |             |              | 0.63    |            | 0.70         | 1.20            |

## 13.0 Openings

| Name                    | Opening Type | Location       | Orientation | Area (m²) | Pitch |
|-------------------------|--------------|----------------|-------------|-----------|-------|
| 01 Front Door           | Front Door   | External Walls | East        | 1.95      | 0     |
| 01 Glazing Front        | Glazing      | External Walls | East        | 4.80      | 0     |
| 02 Glazing Rear         | Glazing      | External Walls | West        | 4.80      | 0     |
| 02 Glazing Rear BiDoors | Glazing      | External Walls | West        | 6.30      | 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 |
|--------------------------------------------------|--------------------------|--------|------|---------------------|----------|
| E1 Steel lintel with perforated steel base plate | Non Gov Approved Schemes | 13.00  | 0.10 | 0.10                | No       |
| E3 Sill                                          | Non Gov Approved Schemes | 12.20  | 0.03 | 0.03                | No       |
| E4 Jamb                                          | Gov Approved Scheme      | 26.20  | 0.04 | 0.04                | No       |
| E5 Ground floor (normal)                         | Non Gov Approved Schemes | 19.46  | 0.14 | 0.14                | No       |
| E6 Intermediate floor within a dwelling          | Non Gov Approved Schemes | 39.57  | 0.08 | 0.08                | No       |
| E18 Party wall between dwellings                 | Non Gov Approved Schemes | 30.52  | 0.02 | 0.02                | No       |
| E16 Corner (normal)                              | Non Gov Approved Schemes | 23.80  | 0.06 | 0.06                | No       |
| E10 Eaves (insulation at ceiling level)          | Gov Approved Scheme      | 39.50  | 0.06 | 0.06                | No       |
| R7 Flat ceiling (inverted)                       | Non Gov Approved Schemes | 14.52  | 0.06 | 0.06                | No       |

Y-value  W/m²K

## 19.0 Mechanical Ventilation

### Mechanical Ventilation

Mechanical Ventilation System Present

## 20.0 Fans, Open Fireplaces, Flues

Number of open chimneys

Number of open flues

Number of chimneys/flues attached to closed fire

Number of flues attached to solid fuel boiler

Number of flues attached to other heater

Number of blocked chimneys

Number of intermittent extract fans

Number of passive vents

Number of flueless gas fires

## 21.0 Fixed Cooling System

## 22.0 Pressure Testing

Designed AP<sub>50</sub>  m³/(h.m²) @ 50 Pa

Property Tested?

Test Method

## 22.0 Lighting

No Fixed Lighting

# Summary for Input Data

|                                                  | Name                     | Efficacy | Power | Capacity | Count |
|--------------------------------------------------|--------------------------|----------|-------|----------|-------|
|                                                  | Lighting                 | 370.00   | 10.00 | 3700.00  | 16    |
| <b>24.0 Main Heating 1</b>                       | Database                 |          |       |          |       |
| Percentage of Heat                               | 100.00                   |          |       | %        |       |
| Database Ref. No.                                | 18821                    |          |       |          |       |
| Fuel Type                                        | Mains gas                |          |       |          |       |
| SAP Code                                         | 0                        |          |       |          |       |
| In Winter                                        | 83.40                    |          |       |          |       |
| In Summer                                        | 88.00                    |          |       |          |       |
| Model Name                                       | Greenstar 2000           |          |       |          |       |
| Manufacturer                                     | Bosch Thermotechnology   |          |       |          |       |
| System Type                                      | Combi boiler             |          |       |          |       |
| Controls SAP Code                                | 2110                     |          |       |          |       |
| Delayed Start Stat                               | No                       |          |       |          |       |
| Burner Control                                   | Modulating               |          |       |          |       |
| HETAS approved System                            | No                       |          |       |          |       |
| Flue Type                                        | Balanced                 |          |       |          |       |
| Fan Assisted Flue                                | Yes                      |          |       |          |       |
| Is MHS Pumped                                    | Pump in heated space     |          |       |          |       |
| Heating Pump Age                                 | 2013 or later            |          |       |          |       |
| Heat Emitter                                     | Radiators and Underfloor |          |       |          |       |
| Underfloor Heating                               | Yes - Pipes in Concrete  |          |       |          |       |
| Flow Temperature                                 | Unknown                  |          |       |          |       |
| Boiler Interlock                                 | No                       |          |       |          |       |
| Combi boiler type                                | Standard Combi           |          |       |          |       |
| <b>25.0 Main Heating 2</b>                       | None                     |          |       |          |       |
| <b>26.0 Heat Networks</b>                        | None                     |          |       |          |       |
| <b>27.0 Secondary Heating</b>                    | None                     |          |       |          |       |
| <b>28.0 Water Heating</b>                        |                          |          |       |          |       |
| Water Heating                                    | Main Heating 1           |          |       |          |       |
| SAP Code                                         | 901                      |          |       |          |       |
| Flue Gas Heat Recovery System                    | No                       |          |       |          |       |
| Waste Water Heat Recovery Instantaneous System 1 | No                       |          |       |          |       |
| Waste Water Heat Recovery Instantaneous System 2 | No                       |          |       |          |       |
| Waste Water Heat Recovery Storage System         | No                       |          |       |          |       |
| Solar Panel                                      | No                       |          |       |          |       |
| Water use <= 125 litres/person/day               | Yes                      |          |       |          |       |
| Summer Immersion                                 | No                       |          |       |          |       |
| Cold Water Source                                | From mains               |          |       |          |       |
| Bath Count                                       | 1                        |          |       |          |       |
| Supplementary Immersion                          | No                       |          |       |          |       |
| Immersion Only Heating Hot Water                 | No                       |          |       |          |       |
| <b>28.3 Waste Water Heat Recovery System</b>     |                          |          |       |          |       |
| <b>29.0 Hot Water Cylinder</b>                   | None                     |          |       |          |       |
| Cylinder Stat                                    | No                       |          |       |          |       |
| Cylinder In Heated Space                         | No                       |          |       |          |       |
| Independent Time Control                         | No                       |          |       |          |       |

# Summary for Input Data



In Airing Cupboard

No

## 31.0 Thermal Store

None

## 32.0 Photovoltaic Unit

One Dwelling

Export Capable Meter?

Yes

Connected To Dwelling

Yes

Diverter

No

Battery Capacity [kWh]

0.00

**PV Cells kWp**

**Orientation**

**Elevation**

**Overshading FGHRs**

**MCS Certificate**

**Overshading Factor**

**MCS Certificate Reference**

**Panel Manufacturer**

7.20

West

30°

None Or Little No

No

1.00

## 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   | 83 Star Road                                           | Issued on Date | 27/04/2025 |
| Assessment Reference | 00001                                                  | Prop Type Ref  | 3B5P       |
| Property             | 77 , Star Road, Caversham, Reading, Berkshire, RG4 5BE |                |            |

|                                    |          |               |       |      |       |
|------------------------------------|----------|---------------|-------|------|-------|
| SAP Rating                         | 101 A    | DER           | 8.09  | TER  | 10.43 |
| Environmental                      | 93 A     | % DER < TER   |       |      | 22.44 |
| CO <sub>2</sub> Emissions (t/year) | 0.74     | DFEE          | 36.18 | TFEE | 36.97 |
| Compliance Check                   | See BREL | % DFEE < TFEE |       |      | 2.13  |
| % DPER < TPER                      | 19.69    | DPER          | 43.73 | TPER | 54.45 |

|                  |                    |             |           |
|------------------|--------------------|-------------|-----------|
| Assessor Details | Mr. Ruari Mulvenna | Assessor ID | AW51-0001 |
| Client           |                    |             |           |

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

|                                |                            |
|--------------------------------|----------------------------|
| Orientation                    | East                       |
| Property Tenure                | ND                         |
| Transaction Type               | 6                          |
| Terrain Type                   | Suburban                   |
| 1.0 Property Type              | House, Mid-Terrace         |
| Which Floor                    | 0                          |
| 2.0 Number of Storeys          | 3                          |
| 3.0 Date Built                 | 2025                       |
| 3.0 Property Age Band          | L                          |
| 4.0 Sheltered Sides            | 2                          |
| 5.0 Sunlight/Shade             | Average or unknown         |
| 6.0 Thermal Mass Parameter     | Precise calculation        |
| Thermal Mass                   | 106.79 kJ/m <sup>2</sup> K |
| 7.0 Electricity Tariff         | Standard                   |
| Smart electricity meter fitted | No                         |
| Smart gas meter fitted         | No                         |

| 7.0 Measurements | Heat Loss Perimeter | Internal Floor Area  | Average Storey Height |
|------------------|---------------------|----------------------|-----------------------|
| Basement:        | 22.50 m             | 46.80 m <sup>2</sup> | 2.40 m                |
| Ground floor:    | 32.00 m             | 52.00 m <sup>2</sup> | 2.40 m                |
| 1st Storey:      | 21.00 m             | 42.00 m <sup>2</sup> | 2.45 m                |
| 2nd Storey:      | 20.50 m             | 20.50 m <sup>2</sup> | 2.28 m                |

|                 |                      |
|-----------------|----------------------|
| 8.0 Living Area | 37.00 m <sup>2</sup> |
|-----------------|----------------------|

| 9.0 External Walls | Description    | Type        | Construction | U-Value (W/m <sup>2</sup> K) | Kappa (kJ/m <sup>2</sup> K) | Gross Area(m <sup>2</sup> ) | Nett Area (m <sup>2</sup> ) | Shelter Res | Shelter | Openings | Area Calculation Type |
|--------------------|----------------|-------------|--------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|-------------|---------|----------|-----------------------|
|                    | External Walls | Cavity Wall | Other        | 0.18                         | 9.00                        | 134.00                      | 116.15                      | 0.00        | None    | 17.85    | Enter Gross Area      |

| 9.1 Party Walls | Description | Type       | Construction | U-Value (W/m <sup>2</sup> K) | Kappa (kJ/m <sup>2</sup> K) | Area (m <sup>2</sup> ) | Shelter Res | Shelter |
|-----------------|-------------|------------|--------------|------------------------------|-----------------------------|------------------------|-------------|---------|
|                 | Party Walls | Solid Wall | Other        | 0.00                         | 20.00                       | 112.00                 | 0.00        | None    |

| 9.2 Internal Walls | Description     | Construction | Kappa (kJ/m <sup>2</sup> K) | Area (m <sup>2</sup> ) |
|--------------------|-----------------|--------------|-----------------------------|------------------------|
|                    | Internal Wall 1 | Other        | 9.00                        | 62.00                  |

| 10.0 External Roofs | Description      | Type                | Construction                  | U-Value (W/m <sup>2</sup> K) | Kappa (kJ/m <sup>2</sup> K) | Gross Area(m <sup>2</sup> ) | Nett Area (m <sup>2</sup> ) | Shelter Code | Shelter Factor | Calculation Type | Openings |
|---------------------|------------------|---------------------|-------------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|--------------|----------------|------------------|----------|
|                     | External Roof 01 | External Slope Roof | Plasterboard, insulated slope | 0.11                         | 9.00                        | 58.00                       | 58.00                       | None         | 0.00           | Enter Gross Area | 0.00     |

| 10.2 Internal Ceilings | Description         | Storey          | Construction                                   | Area (m <sup>2</sup> ) |
|------------------------|---------------------|-----------------|------------------------------------------------|------------------------|
|                        | Internal Ceiling GF | Lowest occupied | Plasterboard ceiling, carpeted chipboard floor | 52.00                  |

# Summary for Input Data

|                     |    |                                                |       |
|---------------------|----|------------------------------------------------|-------|
| Internal Ceiling 1F | +1 | Plasterboard ceiling, carpeted chipboard floor | 42.00 |
| Internal Ceiling 2F | +2 | Plasterboard ceiling, carpeted chipboard floor | 20.00 |

## 11.0 Heat Loss Floors

| Description     | Type                 | Storey Index    | Construction                           | U-Value (W/m²K) | Shelter Code | Shelter Factor | Kappa (kJ/m²K) | Area (m²) |
|-----------------|----------------------|-----------------|----------------------------------------|-----------------|--------------|----------------|----------------|-----------|
| Heatloss Floors | Ground Floor - Solid | Lowest occupied | Slab on ground, screed over insulation | 0.13            | None         | 0.00           | 110.00         | 52.00     |

## 11.2 Internal Floors

| Description       | Storey Index | Construction                                   | Kappa (kJ/m²K) | Area (m²) |
|-------------------|--------------|------------------------------------------------|----------------|-----------|
| Internal Floor 2F |              | Other                                          | 18.00          | 20.00     |
| Internal Floor 1F |              | Plasterboard ceiling, carpeted chipboard floor | 9.00           | 42.00     |

## 12.0 Opening Types

| Description  | Data Source  | Type       | Glazing                | Glazing Gap | Filling Type | G-value | Frame Type | Frame Factor | U Value (W/m²K) |
|--------------|--------------|------------|------------------------|-------------|--------------|---------|------------|--------------|-----------------|
| Front Door   | Manufacturer | Solid Door |                        |             |              | 0.00    |            |              | 1.00            |
| Glazing      | Manufacturer | Window     | Double Low-E Soft 0.05 |             |              | 0.63    |            | 0.70         | 1.20            |
| Roof Glazing | Manufacturer | Roof Light | Double Low-E Soft 0.05 |             |              | 0.63    |            | 0.70         | 1.20            |

## 13.0 Openings

| Name                    | Opening Type | Location       | Orientation | Area (m²) | Pitch |
|-------------------------|--------------|----------------|-------------|-----------|-------|
| 01 Front Door           | Front Door   | External Walls | East        | 1.95      | 0     |
| 01 Glazing Front        | Glazing      | External Walls | East        | 4.80      | 0     |
| 02 Glazing Rear         | Glazing      | External Walls | West        | 4.80      | 0     |
| 02 Glazing Rear BiDoors | Glazing      | External Walls | West        | 6.30      | 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 |
|--------------------------------------------------|--------------------------|--------|------|---------------------|----------|
| E1 Steel lintel with perforated steel base plate | Non Gov Approved Schemes | 13.00  | 0.10 | 0.10                | No       |
| E3 Sill                                          | Non Gov Approved Schemes | 12.20  | 0.03 | 0.03                | No       |
| E4 Jamb                                          | Gov Approved Scheme      | 26.20  | 0.04 | 0.04                | No       |
| E5 Ground floor (normal)                         | Non Gov Approved Schemes | 19.46  | 0.14 | 0.14                | No       |
| E6 Intermediate floor within a dwelling          | Non Gov Approved Schemes | 39.57  | 0.08 | 0.08                | No       |
| E18 Party wall between dwellings                 | Non Gov Approved Schemes | 30.52  | 0.02 | 0.02                | No       |
| E16 Corner (normal)                              | Non Gov Approved Schemes | 23.80  | 0.06 | 0.06                | No       |
| E10 Eaves (insulation at ceiling level)          | Gov Approved Scheme      | 39.50  | 0.06 | 0.06                | No       |
| R7 Flat ceiling (inverted)                       | Non Gov Approved Schemes | 14.52  | 0.06 | 0.06                | No       |

Y-value  W/m²K

## 19.0 Mechanical Ventilation

### Mechanical Ventilation

Mechanical Ventilation System Present

## 20.0 Fans, Open Fireplaces, Flues

Number of open chimneys

Number of open flues

Number of chimneys/flues attached to closed fire

Number of flues attached to solid fuel boiler

Number of flues attached to other heater

Number of blocked chimneys

Number of intermittent extract fans

Number of passive vents

Number of flueless gas fires

## 21.0 Fixed Cooling System

## 22.0 Pressure Testing

Designed AP<sub>50</sub>  m³/(h.m²) @ 50 Pa

Property Tested?

Test Method

## 22.0 Lighting

No Fixed Lighting

# Summary for Input Data

|                                                  | Name                     | Efficacy | Power | Capacity | Count |
|--------------------------------------------------|--------------------------|----------|-------|----------|-------|
|                                                  | Lighting                 | 370.00   | 10.00 | 3700.00  | 16    |
| <b>24.0 Main Heating 1</b>                       | Database                 |          |       |          |       |
| Percentage of Heat                               | 100.00                   |          |       | %        |       |
| Database Ref. No.                                | 18821                    |          |       |          |       |
| Fuel Type                                        | Mains gas                |          |       |          |       |
| SAP Code                                         | 0                        |          |       |          |       |
| In Winter                                        | 83.40                    |          |       |          |       |
| In Summer                                        | 88.00                    |          |       |          |       |
| Model Name                                       | Greenstar 2000           |          |       |          |       |
| Manufacturer                                     | Bosch Thermotechnology   |          |       |          |       |
| System Type                                      | Combi boiler             |          |       |          |       |
| Controls SAP Code                                | 2110                     |          |       |          |       |
| Delayed Start Stat                               | No                       |          |       |          |       |
| Burner Control                                   | Modulating               |          |       |          |       |
| HETAS approved System                            | No                       |          |       |          |       |
| Flue Type                                        | Balanced                 |          |       |          |       |
| Fan Assisted Flue                                | Yes                      |          |       |          |       |
| Is MHS Pumped                                    | Pump in heated space     |          |       |          |       |
| Heating Pump Age                                 | 2013 or later            |          |       |          |       |
| Heat Emitter                                     | Radiators and Underfloor |          |       |          |       |
| Underfloor Heating                               | Yes - Pipes in Concrete  |          |       |          |       |
| Flow Temperature                                 | Unknown                  |          |       |          |       |
| Boiler Interlock                                 | No                       |          |       |          |       |
| Combi boiler type                                | Standard Combi           |          |       |          |       |
| <b>25.0 Main Heating 2</b>                       | None                     |          |       |          |       |
| <b>26.0 Heat Networks</b>                        | None                     |          |       |          |       |
| <b>27.0 Secondary Heating</b>                    | None                     |          |       |          |       |
| <b>28.0 Water Heating</b>                        |                          |          |       |          |       |
| Water Heating                                    | Main Heating 1           |          |       |          |       |
| SAP Code                                         | 901                      |          |       |          |       |
| Flue Gas Heat Recovery System                    | No                       |          |       |          |       |
| Waste Water Heat Recovery Instantaneous System 1 | No                       |          |       |          |       |
| Waste Water Heat Recovery Instantaneous System 2 | No                       |          |       |          |       |
| Waste Water Heat Recovery Storage System         | No                       |          |       |          |       |
| Solar Panel                                      | No                       |          |       |          |       |
| Water use <= 125 litres/person/day               | Yes                      |          |       |          |       |
| Summer Immersion                                 | No                       |          |       |          |       |
| Cold Water Source                                | From mains               |          |       |          |       |
| Bath Count                                       | 1                        |          |       |          |       |
| Supplementary Immersion                          | No                       |          |       |          |       |
| Immersion Only Heating Hot Water                 | No                       |          |       |          |       |
| <b>28.3 Waste Water Heat Recovery System</b>     |                          |          |       |          |       |
| <b>29.0 Hot Water Cylinder</b>                   | None                     |          |       |          |       |
| Cylinder Stat                                    | No                       |          |       |          |       |
| Cylinder In Heated Space                         | No                       |          |       |          |       |
| Independent Time Control                         | No                       |          |       |          |       |

# Summary for Input Data



In Airing Cupboard

No

## 31.0 Thermal Store

None

## 32.0 Photovoltaic Unit

One Dwelling

Export Capable Meter?

Yes

Connected To Dwelling

Yes

Diverter

No

Battery Capacity [kWh]

0.00

PV Cells kWp

Orientation

Elevation

Overshading FGHRs

MCS Certificate

Overshading Factor

MCS Certificate Reference

Panel Manufacturer

7.20

West

30°

None Or Little No

No

1.00

## 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