



# Mill Lane, Whitburn

## Sustainability Report



November 2025

## Introduction

This Energy Report has been prepared by Award Energy Consultants for Story Homes in connection with a planning application for a development of 205 new build dwellings at Mill Lane, Whitburn. This report considers the issues surrounding sustainable construction with regards to the proposed residential development in order to reduce the predicted energy and water usage of the site as per South Tyneside Council's development policies.

## Policy Context

The following documents were considered:

**Building Regulations Part L1 2021** - as newly constructed dwellings, Part L1 is of particular note. Part L1 sets minimum standards for fabric and energy efficiency for new dwellings, with the Carbon Emissions Targets set at 31% over Part L1a 2013 for new builds. Whilst the site at Mill Lane, Whitburn is likely to fall within the remit of the Future Homes Standards, this Report is founded in Part L1 2021 and SAP 10 as the currently confirmed methodology

**National Planning Policy Framework 2024** - strengthens the emphasis on sustainable development and requires new developments to secure the highest viable resource and energy efficiency and reduction in emissions by considering Governments and other national standards

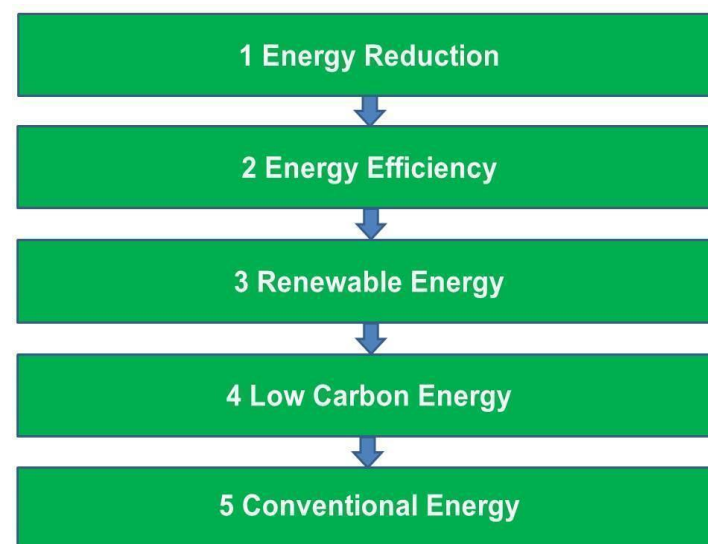
**South Tyneside Policy 6 Renewables and Low Carbon Energy Generation-** espouses the need for the greater incorporation of renewable energy generation without discernible adverse impacts on the local natural and built environment. This policy applies to the use of photovoltaics

**South Tyneside Climate Change Policy SP15-** features the objectives of climate change mitigation and adaptation as foundational considerations by embedding sustainability principles into the design, construction, and operation of developments

**South Tyneside Council's Policy 5 Reducing Energy Consumption and Carbon Emissions** acknowledges the relationship between these two objectives, proceeding to introduce the energy hierarchy as a fundamental factor in achieving climate change mitigation.

## Energy Hierarchy

Award Energy have been instructed to assess the potential energy efficiencies and carbon emission reductions that can be achieved through aligning with the Government's Energy Hierarchy as encouraged by South Tyneside Council's Policy 5. Design teams are required to apply the following steps to reduce carbon emissions through the steps outlined below:



## Step 1 - Energy Reduction

The first step of the hierarchy requires developments to use less energy through passive design measures including the maximisation of solar heating; reducing heat loss; meeting the requirements to reduce energy consumption; and enhancing energy efficiency. This has occurred via:

- Internally, the accommodation has been laid out to maximise the internal space and light afforded, with primary habitable rooms benefitting from a southern orientation. Each of the principal living rooms will have sufficient glazing to allow natural light to penetrate the rooms, reducing the need for artificial lighting
- The construction specification of every home will include high levels of insulation in the ground floor, external walls and roof spaces and all fabric elements will have u-values lower than those required by Part L 2021
- High levels of air tightness to be achieved within the construction of the dwelling to reduce unnecessary heat loss; all dwellings will be tested for air leakage
- All dwellings will meet the requirements of Approved Document Part O: Overheating, utilising an appropriate glazing specification and opening areas to minimise solar gain and allow purge ventilation
- All houses will benefit from a garden or private space for recreation, thus allowing external space for recreation and clothes drying

## Step 2 - Energy Efficiency

- Energy efficient lamps will be installed in every light fitting. Each entrance will be illuminated with an energy efficient external light with appropriate controls to avoid unnecessary use
- The design team proposes using natural ventilation via background/trickle ventilation, opening windows and wet room extraction.
- Electric Vehicle Charging Points or Bollards will be provided for each dwelling

## Step 3 – Renewable Energy

- Story Homes propose the use of renewable technologies in the form of photovoltaics (hereby referred to as PV). These shall be substantive in the amount of renewable energy generated consequently reducing the energy required from the grid. The average amounts per housetype is demonstrated in **Table 4**
- The inclusion of Export Capable Meters will also generate renewable energy that can be sent back to the grid minimising further the energy demands of the site

## Energy Efficiency & Carbon Emissions

To evaluate the anticipated sustainability strategy, Award Energy have compared the specification that will achieve minimum compliance with Part L1 2021 with the proposed enhanced specification, as shown in Table 1. Within the enhanced specification, all heat loss elements have been insulated beyond regulation requirements and regulated u-values for external walls, floors and roofs have been surpassed. A design air pressure test of 4.5 has also been targeted, which again demonstrates willingness to go beyond the minimum requirements.

**Table 1**

| Element                                                      | Value required<br>by AD Part L1 2021<br>(u-value) | Enhanced specification<br>(u-value) |
|--------------------------------------------------------------|---------------------------------------------------|-------------------------------------|
| Walls (w/m <sup>2</sup> k)                                   | 0.26                                              | 0.23                                |
| Party Walls (w/m <sup>2</sup> k)                             | 0.20                                              | 0.00                                |
| Roofs (w/m <sup>2</sup> k)                                   | 0.16                                              | 0.09                                |
| Floors (w/m <sup>2</sup> k)                                  | 0.18                                              | 0.12                                |
| Windows (w/m <sup>2</sup> k)                                 | 1.6                                               | 1.3                                 |
| Doors (w/m <sup>2</sup> k)                                   | 1.6                                               | 1.2                                 |
| Design air pressure test (m <sup>3</sup> /h/m <sup>2</sup> ) | 8                                                 | 4.5                                 |

## Carbon Reduction Calculations

Award Energy has compared the specification that will achieve minimum compliance with Part L 2021 with the intended enhanced specification as shown in Table 1 plus the installation of PV. Table 2 below shows the predicted Carbon Emissions for the proposed house types.

**Table 2**

| House Type    | Carbon Emissions (KgCO <sub>2</sub> /Year/m <sup>2</sup> )<br>Baseline specification | Carbon Emissions (KgCO <sub>2</sub> /Year/m <sup>2</sup> )<br>Enhanced specification | % Reduction in Carbon Emissions |
|---------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------|
| Mid-Terrace   | 10.07                                                                                | 9.82                                                                                 | 2.48%                           |
| Semi-Detached | 10.16                                                                                | 9.88                                                                                 | 2.76%                           |
| Detached      | 10.65                                                                                | 10.42                                                                                | 2.16%                           |
| Apartments    | 13.20                                                                                | 12.82                                                                                | 2.87%                           |
| Bungalow      | 9.64                                                                                 | 9.42                                                                                 | 2.28%                           |

\*calculated using SAP10 software. Award Energy can, upon request, provide reports from SAP10.

Table 3 below shows the predicted Carbon Emissions for each house type, weighted to accurately represent the mix on site. The predicted baseline weighted carbon emissions for the site are **10.47 KgCO<sub>2</sub>/Year/m<sup>2</sup>** (with all properties meeting the minimum requirements of Part L1 2021). The average predicted carbon emissions with the design team's enhanced specification plus the installation of PV are **10.23KgCO<sub>2</sub>/Year/m<sup>2</sup>**, representing a **2.29%** reduction in site-wide carbon emissions over Part L1 2021.

**Table 3**

| House Type                                                                   | Number     | Weighted Average Carbon Emissions<br>(KgCO <sub>2</sub> /Year/m <sup>2</sup> )<br>Baseline specification | Weighted Average Carbon Emissions<br>(KgCO <sub>2</sub> /Year/m <sup>2</sup> )<br>Enhanced specification |
|------------------------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Mid-Terrace                                                                  | 14         | 0.70                                                                                                     | 0.69                                                                                                     |
| Semi-Detached                                                                | 76         | 3.76                                                                                                     | 3.66                                                                                                     |
| Detached                                                                     | 97         | 5.00                                                                                                     | 4.90                                                                                                     |
| Apartments                                                                   | 8          | 0.53                                                                                                     | 0.51                                                                                                     |
| Bungalow                                                                     | 10         | 0.48                                                                                                     | 0.47                                                                                                     |
| <b>Total</b>                                                                 | <b>205</b> | <b>10.47</b>                                                                                             | <b>10.23</b>                                                                                             |
| <b>Weighted Average Carbon Emission Reduction above Part L1 2021 = 2.29%</b> |            |                                                                                                          |                                                                                                          |

\*calculated using SAP10 software. Award Energy can, upon request, provide reports from SAP10.

## Energy Reduction Calculations

Table 4 demonstrates the amount of PV detailed on each specific house type, proceeding to illustrate the effectiveness of PV in reducing energy demand for each specific housetype.

**Table 4**

| Dwelling Type | PV per Plot (KWp) | Energy Demand Enhanced Specification (kWh/Year) | Total Energy Demand Enhanced specification + PV (kWh/Year) | % Reduction in Energy Demand through Renewables |
|---------------|-------------------|-------------------------------------------------|------------------------------------------------------------|-------------------------------------------------|
| Apartments    | 1.013             | 3898.97                                         | 3016.54                                                    | 22.63%                                          |
| Mid-Terrace   | 2.025             | 5037.82                                         | 3567.09                                                    | 29.19%                                          |
| Semi-Detached | 2.835             | 6302.09                                         | 4243.08                                                    | 32.67%                                          |
| Detached      | 4.05              | 8976.30                                         | 6034.85                                                    | 32.77%                                          |
| Bungalow      | 3.645             | 4905.35                                         | 2258.05                                                    | 53.97%                                          |

Once accurately weighted, to reflect the house type mix on site, the average Energy Demand with the enhanced specification is predicted to be 7319.19 kWh per year. Once approximately 681.21 kWp of photovoltaics are applied, the average energy demand is predicted to reduce to 4900.03 kWh per year, a **33.05%** reduction as shown below.

**Table 5**

| House Type                                          | Number     | Weighted Average Energy Demand Enhanced Specification (kWh/Year) | Weighted Average Energy Demand Enhanced specification + PV (kWh/Year) | Overall Amount of PV |
|-----------------------------------------------------|------------|------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------|
| Detached                                            | 97         | 4247.32                                                          | 2855.52                                                               | 392.85               |
| Mid-Terrace                                         | 14         | 344.05                                                           | 243.61                                                                | 28.35                |
| Semi-Detached                                       | 76         | 2336.39                                                          | 1573.04                                                               | 215.46               |
| Apt                                                 | 8          | 152.15                                                           | 117.72                                                                | 8.10                 |
| Bungalow                                            | 10         | 239.29                                                           | 110.15                                                                | 36.45                |
| <b>Total</b>                                        | <b>205</b> | <b>7319.19</b>                                                   | <b>4900.03</b>                                                        | <b>681.21</b>        |
| <b>Energy Reduction Through Renewables = 33.05%</b> |            |                                                                  |                                                                       |                      |

## Fabric Energy Demand Calculations

Using SAP10 software and the specification detailed in Table 1, the predicted Fabric Energy Demand for a sample of dwelling types in kWh/m<sup>2</sup> per year was calculated, as shown in Table 6 below.

**Table 6**

\*calculated using SAP10

| House Type    | Fabric Energy Demand (kWh/m <sup>2</sup> /yr)<br>Baseline specification | Fabric Energy Demand (kWh/m <sup>2</sup> /yr)<br>Enhanced specification | % Reduction in Fabric Energy Demand |
|---------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------|
| Detached      | 44.87                                                                   | 43.38                                                                   | 3.32%                               |
| Mid-Terrace   | 30.65                                                                   | 29.29                                                                   | 4.42%                               |
| Semi-Detached | 35.57                                                                   | 35.09                                                                   | 1.35%                               |
| Apt           | 33.00                                                                   | 32.44                                                                   | 1.7%                                |
| Bungalow      | 38.38                                                                   | 35.46                                                                   | 7.62%                               |

As outlined in Table 7 below, the baseline weighted average predicted Fabric Energy Demand for the site was then calculated to be **39.67 kWh/m<sup>2</sup>/yr** (with all properties meeting the minimum requirements of Part L1 2021). The weighted average predicted fabric energy demand with the design team's enhanced specification is **38.53 kWh/m<sup>2</sup>/yr** – a **2.87%** improvement over the 2021 Building Regulations.

**Table 7**

| House Type                                                                                                | Number     | Weighted Fabric Energy Demand (kWh/m <sup>2</sup> /yr)<br>Baseline specification | Weighted Fabric Energy Demand (kWh/m <sup>2</sup> /yr)<br>Enhanced specification |
|-----------------------------------------------------------------------------------------------------------|------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Detached                                                                                                  | 97         | 21.23                                                                            | 20.53                                                                            |
| Mid-Terrace                                                                                               | 14         | 2.09                                                                             | 2.00                                                                             |
| Semi-Detached                                                                                             | 76         | 13.19                                                                            | 13.01                                                                            |
| Apt                                                                                                       | 8          | 1.29                                                                             | 1.27                                                                             |
| Bungalow                                                                                                  | 10         | 1.87                                                                             | 1.73                                                                             |
| <b>Total</b>                                                                                              | <b>205</b> | <b>39.67</b>                                                                     | <b>38.53</b>                                                                     |
| <b>Site-wide average Fabric Energy Demand Reduction (kWh/m<sup>2</sup>/yr) above Part L1 2021 = 2.87%</b> |            |                                                                                  |                                                                                  |

\*calculated using SAP10 software. Award Energy can, upon request, provide reports from SAP10.

## Material Selection

Significant amounts of energy and natural resources are consumed in the production, transportation and disposal of building materials. Two issues are significant in the specification of building materials; the environmental impact of materials and the responsible sourcing of materials. Story Homes is dedicated to taking pro-active measures to address these issues and commit to obtaining responsible sourcing certification for at least 90% of the building elements of each dwelling.

## Waste

Story Homes has national policies to promote the reduction and effective management of construction related waste. Robust procedures are in place to share materials such as soil and aggregate between sites and to sort waste on and off site to divert waste from landfill. The re-use and recycling of wooden pallets is encouraged to reduce the amount of wood waste sent to landfill and Story Homes work closely with suppliers to minimise and recycle packaging. All construction activities will be carried out to minimise dust, fumes, discharges and any other form of pollution on site, in line with best practice policies.

## Water Efficiency

The Approved Document G (2010) restricts new build dwellings to a maximum consumption of 125 litres per person per day. It is proposed that eco-sanitary ware and restricted flow rates will be introduced into the design of the development to obtain the appropriate level of water efficiency. The following table has been extracted from the Water Efficiency Calculator, demonstrating that 99.2 litres of water consumption a day will be achieved; a significantly higher level of efficiency than that required by the Building Regulations.

| Installation Type            | Unit of Measurement           | Capacity/<br>Flow<br>Rate | Use<br>Factor | Fixed Use | Litres Per<br>Person per<br>day |
|------------------------------|-------------------------------|---------------------------|---------------|-----------|---------------------------------|
| WC (Dual Flush)              | Full Flush (litres)           | 4                         | 1.46          | 0.00      | 5.84                            |
|                              | Part Flush (litres)           | 2.6                       | 2.96          | 0.00      | 7.70                            |
| Taps (excluding kitchen tap) | Flow rate (litres/minute)     | 5                         | 1.58          | 1.58      | 9.48                            |
| Baths (where shower present) | Capacity to overflow (litres) | 180                       | 0.11          | 0.00      | 19.80                           |
| Showers (where bath present) | Flow rate (litres/minute)     | 6                         | 4.37          | 0.00      | 26.22                           |
| Kitchen sink tap             | Flow rate (litres/minute)     | 9                         | 0.44          | 10.36     | 14.32                           |
| Washing Machine              | Litres/kg dry load            | 8.17                      | 2.1           | 0.00      | 17.16                           |
| Dishwasher                   | Litres/place setting          | 1.25                      | 3.60          | 0.00      | 4.50                            |
| <b>TOTAL</b>                 |                               |                           |               |           | <b>103.57</b>                   |

|                                         |              |
|-----------------------------------------|--------------|
| <b>Total Internal Water Consumption</b> | 103.57       |
| <b>Normalisation Factor (x 0.91)</b>    | 94.25        |
| <b>External Use</b>                     | 5.00         |
| <b>Part G Water Consumption</b>         | <b>99.20</b> |

## Conclusion

High standards of building fabric, passive design, implementation of renewable energy generation, and water use efficiency ensure that many sustainability measures are built into the development of 205 dwellings at Mill Lane, Whitburn and therefore offer ongoing resilience against the future effects of climate change. This strategy is predicted to reduce Fabric Energy Demand by **2.87%** through the use of enhanced fabric. As well as this, carbon emissions will be reduced by **2.29%** above Part L1 2021 regulations, and energy demand will decrease by **33.05%** due to the introduction of renewable technology in the form of PV.

## Caveat

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