

**Proposed development at Turnpike Close,  
Semington,  
Wiltshire,**

**Energy and Carbon  
Statement of Intent**

**44053**

**Submission Version**

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## 1 EXECUTIVE SUMMARY

The development at Turnpike Close will be delivered in alignment with the Wiltshire planning framework energy and carbon standards. This Statement of Intent sets out the scheme's approach to meeting current regulatory requirements and demonstrating best practice in sustainable design, construction, and operation.

### Policy Context

The proposals are designed to comply with the Wiltshire core strategy framework adopted in January 2015 and will follow the objectives to address the climate change core policy 41 (Sustainable Construction and Low Carbon Energy) to evidence compliance. This ensures that the development Wiltshire's strategic objectives of reducing greenhouse gas emissions, enhancing energy efficiency, and delivering climate-resilient communities. Development will be well insulated and designed to take advantage of natural light and heat from the sun and use natural air movement for ventilation, whilst maximising cooling in the summer.

### Energy Efficiency and Operational Performance

- **SAP Compliance:** The scheme will achieve compliance with *Part L 2021* through SAP calculations, ensuring that the dwellings deliver significant improvements in energy efficiency compared with previous regulatory standards.
- **Overheating Mitigation:** *Part O* overheating risk will be assessed using CIBSE TM59 methodology to ensure internal comfort and resilience to future climate conditions.

The development at Turnpike Close is committed to meet or exceed *Part L 2021* and *Part O* requirements.



## 2 INTRODUCTION

### 2.1 PROJECT SCOPE

Complete Sustainability Solutions have been commissioned to prepare an Energy and Carbon Statement of intent to assist with the planning submission for the proposed scheme.

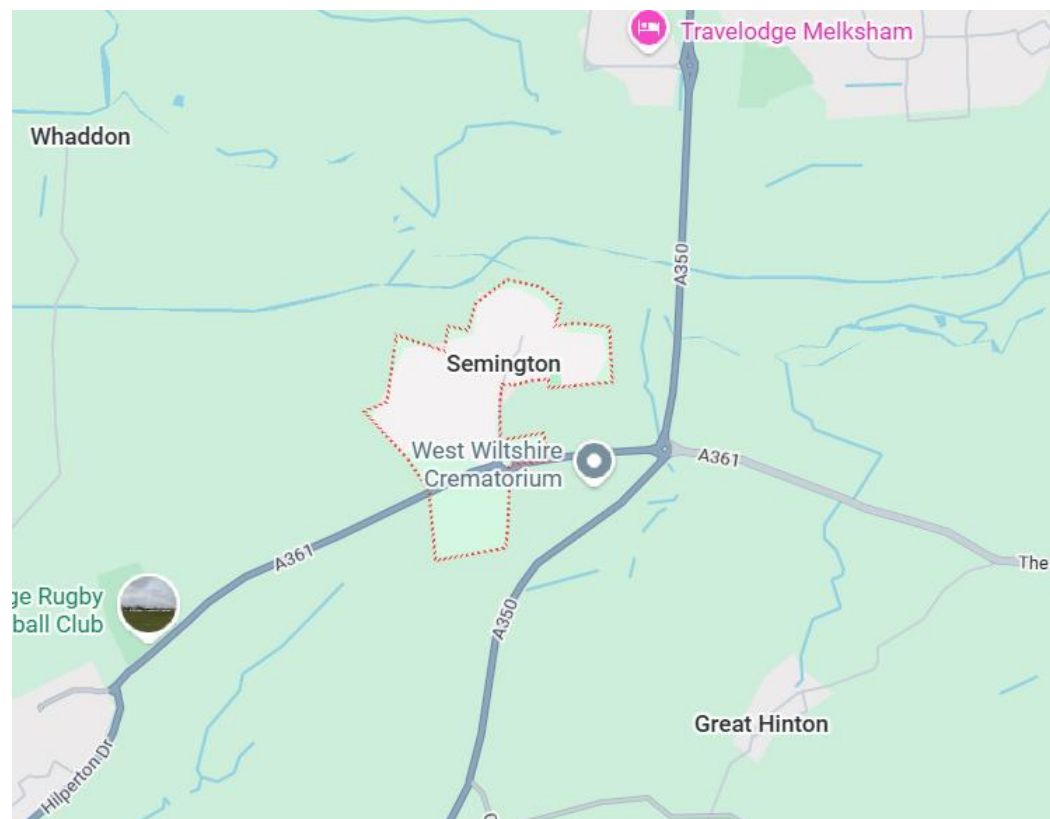
The purpose of this energy and carbon statement is to set out the principles that the scheme will follow once the scheme reaches detailed planning and a design pack has been developed further to include a full set of working drawings to allow the for the relevant assessment to be undertaken.

### 2.2 DEVELOPMENT DESCRIPTION

Site name: Land at Turnpike Close

The proposed development at Turnpike Close, Semington, Wiltshire comprises forty-eight new residential units, consisting of a mix of detached, semi-detached, and terraced houses, together with a village shop with an approximate floor area of 280 m<sup>2</sup>. The development's fabric specification is expected to exceed the minimum requirements of Part L of the Building Regulations. Furthermore, each dwelling is anticipated to incorporate either an air source heat pump and/or solar photovoltaic panels to contribute to a reduction in carbon emissions at later design stages.

- *An application for outline permission for residential development (all matters reserved other than access)*



Figures 1 and 2 – google earth map and satellite view of the proposed site location.

## 2.3 ILLUSTRATIVE MASTERPLAN



*Figure 3: Illustrative master plan*

### 3 POLICY CONTEXT

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Within this section of the report, we will review both local and national policy, establishing key principles that can be taken forward and applied across the development.

#### 3.1 National Policy Context – National Planning Policy Framework December 2024

##### **Section 2. Achieving Sustainable Development**

(8) - Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):

**a) an economic objective** – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure.

**b) a social objective** – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being.

**c) an environmental objective** – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

##### **Section 14. Meeting the Challenge of Climate Change, Flooding and Coastal Change**

(164) – New development should be planned for in ways that:

a) avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through incorporating green infrastructure and sustainable drainage systems; and

b) help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings in plans should reflect the Government's policy for national technical standards.

**(165)** – To help increase the use and supply of renewable and low carbon energy and heat, plans should:

- a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, and their future re-powering and life extension, while ensuring that adverse impacts are addressed appropriately (including cumulative landscape and visual impacts);
- b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and
- c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for colocating potential heat customers and suppliers.

**(166)** – In determining planning applications, local planning authorities should expect new development to:

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

**(168)** – When determining planning applications for all forms of renewable and low carbon energy developments and their associated infrastructure, local planning authorities should:

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

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

### 3.2 Local Policy Context

Wiltshire Core strategy – January 2015

#### **Core Policy 41: Sustainable Construction and low-carbon energy**

The core strategy sets out the strategic vision for delivering sustainable growth over the period up to 2026 with a dramatic reduction in greenhouse gas emissions, will be supported through a range of measures including:

- Promoting the retrofitting of existing buildings with measures to improve energy efficiency and generate renewable and low carbon energy, heating and cooling.
- Development will be well insulated and designed to take advantage of natural light and heat from the sun and use natural air movement for ventilation, whilst maximising cooling in the summer.
- New homes (excluding extensions and conversions) will be required to achieve at least Level 4 (in full) of the Code for Sustainable Homes.
- Increasing the range of nature-based solutions including carbon sequestration through the restoration of peat-based habitats, woodland management, tree planting and natural flood management techniques.

#### Assessment Criteria

| Criteria                                 |                       |                        |
|------------------------------------------|-----------------------|------------------------|
| % Improvement 2010 DER/TER* <sup>1</sup> | Credits* <sup>2</sup> | Mandatory Requirements |
| ≥ 8%                                     | 1                     | Level 4                |
| ≥ 16%                                    | 2                     |                        |
| ≥ 25%                                    | 3                     |                        |
| ≥ 36%                                    | 4                     |                        |
| ≥ 47%                                    | 5                     |                        |
| ≥ 59%                                    | 6                     |                        |
| ≥ 72%                                    | 7                     |                        |
| ≥ 85%                                    | 8                     |                        |
| ≥ 100%                                   | 9                     | Level 5                |
| Zero Net CO <sub>2</sub> Emissions       | 10                    | Level 6                |
| Default Cases                            |                       |                        |
| None                                     |                       |                        |

\*<sup>1</sup> Performance requirements are equivalent to those in previous scheme versions but are now measured using the AD L1A 2010 TER as the baseline.

\*<sup>2</sup> Up to nine credits are awarded on a sliding scale. The scale is based on increments of 0.1 credits, distributed equally between the benchmarks defined in this table.

*Figure4: Code of Sustainable Home Level 4 requirement*

## 4 PART L 2021 SAP CALCULATIONS

The developer is committed to the providing full SAP calculations to meet the policy requirements outlined within this report. A full energy and carbon statement will be produced when detailed planning is achieved. This will follow the energy hierarchy with the emissions reported and compared against the planning targets.

### 4.1 PREVIEW AND IMPLEMENT THE ENERGY HIERARCHY: BE LEAN – BE CLEAN – BE GREEN

The Energy Hierarchy is a classification of energy options, prioritised to assist progress towards a more sustainable energy system. The energy hierarchy uses a step-by-step process:

- Step 1 Be lean – Use less energy.
- Step 2 Be Clean – Use energy efficiently
- Step 3 Be Green – Utilise renewable technology

Specification to satisfy all three measures will be more detailed out at later design stages as design evolves. However, realistic assumptions are mentioned in table 1, 2 and 3 for reference.

### 4.2 BE LEAN – USE LESS ENERGY

The developer, in accordance with both national and local planning policy, has stated their wish towards ensuring the development follows a fabric first approach, therefore reducing demand on the national grid as reasonably possible.

Below we have highlighted the proposed U values, going beyond the requirements of Building Regulations; thus improving upon the baseline CO<sub>2</sub> emissions.

Beyond the fabric first approach, the next stage is to look at possible be lean measures that can be introduced across the site to minimise energy demand. Below we have identified the practical measures to be introduced:

### 4.3 BE CLEAN – SUPPLY ENERGY EFFICIENTLY

Within this section of the energy hierarchy, we see an emphasis being placed upon ensuring the regulated energy demands of the development are met as efficiently as possible.

District and site-wide heat networks can be utilised to provide heating and hot water to a development in an efficient manner. In this instance there isn't a district wide network within the vicinity of the scheme (see appendix B).

*Table 1: Summary of Proposed Be Lean Measures*

| Element           | Building Fabric           |                     |
|-------------------|---------------------------|---------------------|
|                   | L1A Minimum Requirement U | Proposed Dwelling U |
| Ground Floor      | 0.18                      | 0.12                |
| External Wall     | 0.26                      | 0.18                |
| Roof              | 0.16                      | 0.09                |
| Windows including | 1.40                      | 1.2                 |
| External Doors    | 1.60                      | 1.2                 |
| Air Permeability  | 8                         | 4                   |

*Table 2: Additional Be Lean Measures*

| Be Lean                                                           |
|-------------------------------------------------------------------|
| Low Air Leakage Rates                                             |
| Dedicated LED low energy efficient light fitting within all areas |
| Lighting controls to all applicable areas                         |

*Table 3: Be Clean Measures*

| Be Clean                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PV to be sized per dwelling upon completion of full desing stage SAP calcuatlions should gas boilers be preferred. If ASHP is selected then PV may be omitted. |

Furthermore, opportunities to include a combined heat and power system (CHP) may be considered, which allows for the production of electricity and although the scheme will provide a mix of users which could allow for a site wide heat network and Combined Heat and Power (CHP) system, the development programme, size of the development, and uses are not aligned in a way to allow for CHP to be considered and has therefore been discounted.

| Technology                  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Pros                                                                                                                                                                                                                                                                                                   | Cons                                                                                                                                                                                                                                                                                            | Project Suitability                                                                                                                                                                                                      | Included in Proposed Scheme? |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| Solar Thermal               | Solar thermal hot water collectors are panels or evacuated tubes which are typically located on the roof of the buildings. The collectors harness the sun's energy to warm domestic hot water                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>Reduced fuel bills and carbon footprint</li> <li>Low maintenance</li> <li>Proven technology</li> </ul>                                                                                                                                                          | <ul style="list-style-type: none"> <li>Only compatible with boilers that have hot water storage</li> <li>Need south facing roofs to optimise efficiency</li> <li>Carbon saved is low comparative to the savings offered by PV</li> </ul>                                                        | Solar thermal HW is not deemed suitable for this development due to the nature of the scheme in particular the level of hot water demand thus making the suitability of a system unfeasible.                             | ✗                            |
| Solar PV                    | Solar Photovoltaic (PV) panels work by converting energy from the sun into electricity. This can then be used with the development to offset the electrical usage.                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>Reduced bills and carbon footprint</li> <li>Benefit from the feed in tariff</li> <li>Proven technology</li> <li>Relatively maintenance free</li> </ul>                                                                                                          | <ul style="list-style-type: none"> <li>PV panels lose efficiency over their lifetime</li> </ul>                                                                                                                                                                                                 | PV would be suited to this development as it is a simple bolt on technology that will assist with meeting the energy demand of the building and ensure compliance with the local planning policy.                        | ✓                            |
| Combined Heat & Power (CHP) | CHP is a technology which develops heat and power from the same energy source, typically mains gas. The CHP engine is fed by mains gas which then drives an alternator to provide electricity. CHP is highly energy efficient as the heat and electricity are produced on site, therefore reducing transmission losses. Typical efficiencies are 50% for the heat and 35% for the electric.                                                                   | <ul style="list-style-type: none"> <li>Reduced fuel bills and carbon footprints</li> <li>Eligible for the feed in tariff.</li> <li>Proven technology which is in use in many schemes in the UK</li> <li>Suited to large developments</li> </ul>                                                        | <ul style="list-style-type: none"> <li>Not a true renewable technology</li> <li>Heating and electricity demand must remain fairly stable to ensure CHP is running at optimum efficiency</li> <li>Requires a centralised/district heating network</li> <li>Noise. / Capital intensive</li> </ul> | The total size and nature of the development does not lend itself to CHP. It would add to the capital costs of the development making the development not financially viable. For these reasons, CHP has been discounted | ✗                            |
| Air Source Heat Pump        | Air source heat pumps extract heat from the external air which can be used to heat radiators/underfloor heating and hot water within a dwelling. ASHP can still extract heat from air as cold as -15 degrees centigrade. ASHP are particularly useful on sites where gas is not available. There are two forms of ASHP – air to air and air to water.                                                                                                         | <ul style="list-style-type: none"> <li>Can offer lower heating bills and reduce carbon footprints (when compared to electric systems)</li> <li>Relatively maintenance free</li> <li>Offers high efficiencies</li> <li>Can offer heating and cooling depending on system chosen (air to air)</li> </ul> | <ul style="list-style-type: none"> <li>Requires space to locate the external condenser unit. The unit requires lots of space around it to ensure adequate air flow.</li> <li>Requires the use of underfloor heating or large radiators due to low grade heat.</li> <li>Noise issues</li> </ul>  | Air source heat pumps have been included on this development in the form of EDEL Dimplex HW system due to the lower emissions associated with this technology.                                                           | ✓                            |
| Ground Source Heat Pump     | Ground source heat pumps (GSHP) work in a similar way to air source heat pumps, however they extract heat from the ground. A ground loop is buried within the garden and a mixture of water and refrigerant is circulated along the loop. The heat from the ground is then absorbed within the fluid and then passes through a heat exchanger within the GSHP. Ground loops can be laid horizontally at depths of 1-2m or vertically at depths of up to 100m. | <ul style="list-style-type: none"> <li>Can offer lower heating bills and reduce carbon footprints (when compared to electric systems).</li> <li>Relatively maintenance free</li> <li>Offers high efficiencies</li> </ul>                                                                               | <ul style="list-style-type: none"> <li>High capital costs</li> <li>Requires space for boreholes or trenches to locate ground loops</li> <li>Requires the use of under floor heating or large radiators due to low grade heat</li> </ul>                                                         | Ground source heat pumps have been discounted on this development predominantly due to the nature of the development and the lower emissions associated with an air source heat pump.                                    | ✗                            |

## 5 PART O (TM59)

**The proposed development at turnpike close, Semington will undertake a Part O assessment to review all plots on the site against the risk of summer overheating:**

TM59 sets different overheating compliance criteria for homes that are predominantly naturally ventilated and for homes that are predominantly mechanically ventilated.

For homes that are predominantly naturally ventilated, the method with two criteria should be used to assess overheating. The first overheating criteria, which applies to both living rooms/kitchens and bedrooms, is an adaptive criteria. The second overheating criterion is a fixed temperature criteria which applies only to bedrooms. Both criteria must be met for all spaces within a home to demonstrate compliance.

For mechanically ventilated homes, the fixed temperature method with a single criterion should be used to assess overheating. This single criterion must be met for all spaces (living rooms/kitchens and bedrooms) within a mechanically ventilated home to demonstrate compliance.

The TM59 criteria for naturally and mechanically ventilated homes are summarised in the following table. The dwellings in this assessment are assessed against 'predominantly naturally ventilated' criteria.

TM59 Assessments will be completed on the employment and commercial to confirm thermal comfort levels are achieved.

All criteria must be met for all spaces within a home to demonstrate full compliance.

| Assessment Type                      | Assessment Criteria | Applicable Rooms                    | Occupied Hours                                                                               | Naturally Ventilated Homes (open windows)                                                                                                                                                                          | Mechanically Ventilated Homes (closed windows)                                                                                                                                                                                                                                     |
|--------------------------------------|---------------------|-------------------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Predominantly Natural Ventilation    | Criterion 1         | Living rooms, kitchens and bedrooms | Living / Kitchen / Dining rooms – 9am to 10pm (13 hours/day)<br>Bedrooms – 24-hour occupancy | The number of hours during which external and internal temperature difference is greater than or equal to one degree (K) during the period May to September inclusive shall not be more than 3% of occupied hours. | Not Applicable                                                                                                                                                                                                                                                                     |
|                                      | Criterion 2         | Bedrooms only                       | Bedrooms – 24-hour occupancy                                                                 | The operative temperature in the bedroom from 10 pm to 7 am shall not exceed 26 °C for more than 1% of annual hours.<br>33 or more hours above 26 °C will be a fail                                                | Not Applicable                                                                                                                                                                                                                                                                     |
| Predominantly Mechanical Ventilation | Criterion 3         | Living rooms, kitchens and bedrooms | Living / Kitchen / Dining rooms – 9am to 10pm (13 hours/day)<br>Bedrooms – 24-hour occupancy | Not applicable                                                                                                                                                                                                     | The operative temperature in occupied all occupied rooms should not exceed 26 °C for more than 3% of the annual occupied annual hours.<br>143 or more hours above 26 °C for living rooms and kitchens will be a fail.<br>263 or more hours above 26 °C for bedrooms will be a fail |

## 6 CONCLUSIONS

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The proposed Land at Turnpike Close development in Semington, represents a forward-looking, low-carbon residential scheme that aligns fully with national and local sustainability policy frameworks. The project demonstrates compliance with the National Planning Policy Framework (2024), and policy 41 of Wiltshire core strategy (2015). It supports Wiltshire council and Semington parish council ambition to achieve net zero carbon no later than 2038 through responsible design, construction, and operational practices.

Core Policy 41: Sustainable Construction and low-carbon energy:

**How this policy will be achieved:**

**Code for sustainable homes is no longer in operation – Code level 4 targets a 25% improvement over carbon emissions under building regulations 2013. As this scheme falls under Part L 2021 the target of 25% above carbon emissions (DER /TER) Part L 2013 will be achieved by building the standards set out in the current building regulation (Part L 2021).**

A clear and evidence-based approach underpins this strategy. Compliance with Part L 2021 will ensure the dwellings achieve high standards of thermal efficiency and low energy demand, supported by a fabric-first design philosophy. The development will explore appropriate low-carbon and renewable energy solutions as the design evolves, ensuring that selected systems are technically suitable, financially viable, and aligned with the wider sustainability objectives of the scheme.

A comprehensive suite of assessments—SAP and TM59 will be undertaken as the design progresses. These will quantify verify overheating resilience, and energy performance of proposed dwellings.

Through the integration of energy efficiency and responsible specification to reduce carbon emissions, the development at Turnpike Close, Semington will deliver homes that are compliant with regulation and exemplify best practice in sustainable design. The scheme establishes a strong foundation for detailed design and implementation, ensuring measurable contributions to climate resilience, reduced environmental impact, and the creation of a sustainable community for future generations.