

Energy and Sustainability Statement

**Proposed Self-Build Dwelling at Coach House, Radwell Lane, Radwell
June 2025**

Prepared by: Pentangle Design Group

1. Introduction

This Energy and Sustainability Statement accompanies a full planning application for the development of a single self-build residential dwelling at land adjacent to the Coach House, Radwell Lane, Radwell. This document demonstrates how the proposed scheme complies with the *North Hertfordshire Sustainability Supplementary Planning Document (SPD, Sept 2024)*, in particular the requirements for minor residential development as set out in paragraph 1.26(a) of the SPD.

The client's objective is to create a highly sustainable home, making full use of passive design, low-carbon technology, and locally sensitive landscaping.

2. Energy Efficiency and Passive Design

A fabric-first design approach will be adopted with performance exceeding the 2021 Building Regulations Part L requirements. Measures include:

- High levels of insulation and air tightness throughout the building envelope;
- Efficient orientation of the dwelling to maximise natural daylight and passive solar gain, especially to primary living areas;
- Use of thermally massive materials to moderate internal temperature fluctuations;
- High-performance glazing with appropriate solar shading to avoid overheating;
- Layout that encourages natural ventilation and cross-airflow through the home.

These measures collectively contribute to minimising the building's energy demands and align with the SPD's passive design checklist.

3. Renewable and Low-Carbon Energy Strategy

The property will incorporate a robust low-carbon energy strategy, including:

- A **solar photovoltaic (PV) array** mounted on the main roof, integrated with:
- **Battery storage** to maximise on-site renewable energy usage;
- An **air source heat pump (ASHP)** for space heating and hot water;
- **Electric vehicle charging infrastructure** located near the garage;
- Energy-efficient lighting and appliances throughout the home.

This approach is consistent with the SPD “silver” level and contributes to a substantial reduction in operational CO₂ emissions.

4. Estimated Carbon Emissions

Although SAP calculations will be finalised at Building Control stage, the development is targeting:

- A minimum **35% reduction in carbon emissions** over the baseline Target Emission Rate (TER) as required by Building Regulations;
 - **EPC Rating B or better**, in line with North Herts SPD expectations for sustainable new dwellings;
 - Use of a **fabric-first approach and renewable technologies** to meet or exceed the “silver” standard as defined by the SPD.
-

5. Materials and Embodied Carbon

- **Sustainable materials** will be prioritised, including red multi-facing brickwork and clay plain roof tiles;
 - **Recycled content** and sustainably certified timber will be specified where possible;
 - Use of **permeable paving** (e.g. Tegula block paving) for the driveway to reduce surface runoff;
 - The construction process will minimise waste, with off-site prefabrication and responsible site management where feasible.
-

6. Water and Drainage Strategy

- The home will be fitted with **water-efficient appliances** and low-flow sanitaryware, targeting ≤110 litres/person/day;
 - **Sustainable Drainage Systems (SuDS)** will be integrated into the site design, including permeable paving and water butts for garden irrigation;
 - Rainwater management will support both biodiversity and flood resilience objectives.
-

7. Sustainable Transport

- Provision for **cycle storage** in the proposed garage;
 - **EV charging point** to support electric vehicle use;
 - Although in a rural area, the site is a **9-minute walk to a regular bus route** (Service 91), linking to Baldock, Royston, and Letchworth.
-

8. Biodiversity and Landscaping

- **Mature trees** will be retained where feasible, supplemented by **new mixed-species hedgerow planting** and additional trees where indicated.
 - An **ecological assessment** accompanies the application, ensuring mitigation of any potential impacts;
 - Garden space will support soft landscaping, wildlife habitats, and native planting species to enhance ecological value;
 - The proposed layout has been informed by tree constraints and includes tree retention wherever viable.
-

9. Summary Table of Measures

Theme	Measures
Energy Efficiency	Fabric-first; high insulation; passive ventilation and orientation
Renewable Energy	PV panels + battery storage; ASHP; low-energy lighting
Carbon Emissions	Targeting 35%+ reduction beyond TER; EPC B
Water Conservation	≤110 litres/person/day; SuDS; water butts
Materials & Embodied Carbon	Local and low-impact materials; permeable paving
Sustainable Transport	EV charging; cycle storage; public transport nearby
Biodiversity & Landscaping	Tree retention; new hedging; ecological planting

10. Conclusion

This proposed self-build home has been designed to achieve high sustainability standards through a combination of passive design, low-carbon energy systems, water conservation, and landscape-led development. The measures outlined herein reflect both the aspirations of the applicant and the policy requirements of the North Herts Local Plan and Sustainability SPD. This statement supports the application’s contribution to a low-carbon, resilient, and environmentally sensitive future.