

ENERGY STATEMENT

Proposed Conversion of Agricultural Barn to One Dwelling

Lower Titmore Farm, Lower Titmore Green

1. Introduction

This Energy Statement has been prepared in support of a planning application for the conversion of an existing agricultural barn to a single residential dwelling at Lower Titmore Farm.

The statement demonstrates how the proposal will minimise energy demand, improve fabric performance and incorporate low-carbon technologies in accordance with the National Planning Policy Framework (NPPF) and the sustainability objectives of the North Hertfordshire Local Plan.

2. Existing Building

The existing building comprises a modern agricultural barn of timber-clad construction with a pitched roof and open internal layout used for agricultural storage purposes. The building occupies an established farmstead location and is structurally suitable for conversion.

The proposal retains the existing structural shell, thereby reducing embodied carbon associated with demolition and new construction. Re-using the existing building fabric represents a significant sustainability benefit when compared with a replacement dwelling.

3. Energy Hierarchy

The development follows the recognised energy hierarchy:

Be Lean - Reduce Energy Demand

The conversion will achieve high standards of thermal performance through:

- New insulated ground floor construction.
- High-performance roof insulation.
- Insulated wall lining systems installed internally.
- Airtightness measures to minimise heat loss.
- High-performance double or triple glazed windows and doors.
- Thermally broken frames to all new glazed elements.

The objective is to achieve fabric performance significantly in excess of that currently provided by the agricultural building.

Indicative target U-values:

Element	Target U-Value
Roof	$\leq 0.15 \text{ W/m}^2\text{K}$
External Walls	$\leq 0.18 \text{ W/m}^2\text{K}$
Floor	$\leq 0.15 \text{ W/m}^2\text{K}$
Windows and Doors	$\leq 1.4 \text{ W/m}^2\text{K}$

These values are consistent with modern residential conversion standards and current Building Regulations.

Be Clean - Efficient Building Services

The dwelling will utilise highly efficient building systems including:

- Low-energy LED lighting throughout.
- Energy-efficient kitchen and utility appliances.
- Mechanical extract ventilation to wet rooms.
- Smart programmable heating controls.
- Zoned temperature control to maximise operational efficiency.

Water consumption will be reduced through the use of low-flow sanitary fittings and dual-flush WCs.

Be Green - Low and Zero Carbon Energy

The proposed development is intended to incorporate an air source heat pump as the primary heating and hot water source.

Benefits include:

- Elimination of fossil fuel heating.
- High seasonal efficiency.
- Reduced operational carbon emissions.
- Compatibility with low-temperature underfloor heating systems.

Subject to final detailed design and heritage/planning considerations, the south-west and south-east roof slopes may also accommodate roof-mounted photovoltaic panels.

A typical domestic array of approximately 4-6 kWp could significantly offset household electricity demand and further reduce operational carbon emissions.

4. Embodied Carbon Benefits

The conversion approach retains the principal structural frame, external walls and roof structure of the existing agricultural building. [\[21949-100 | PDF\]](#), [\[21949-200 | PDF\]](#)

Retention and reuse of the existing building delivers substantial embodied carbon savings through:

- Avoidance of demolition waste.
- Reduced demand for new construction materials.
- Reduced transportation impacts.
- Conservation of existing resources.

The proposal therefore aligns with circular economy principles and sustainable development objectives.

5. Sustainable Site Design

The associated landscape proposals provide environmental benefits including:

- Native species hedgerow planting.
- New tree planting.
- Meadow grassland establishment.
- Permeable gravel surfacing to parking areas.
- Habitat enhancement and biodiversity improvements. [\[21949-250 | PDF\]](#)

These measures contribute to wider environmental sustainability and climate resilience.

6. Electric Vehicle Charging

The development will include infrastructure for electric vehicle charging within the proposed parking area.

A minimum 7 kW domestic charging point is proposed to support the transition to low-emission transport and to accord with current local planning policy requirements.

7. Conclusion

The proposed conversion of the agricultural barn at Lower Titmore Farm represents a sustainable form of development through the beneficial re-use of an existing rural building. The scheme minimises embodied carbon by retaining the existing structure while improving thermal performance to modern standards.

The dwelling will incorporate energy-efficient building fabric, low-energy services, LED lighting, an air source heat pump and provision for electric vehicle charging. Subject to detailed design, photovoltaic panels may also be incorporated to generate renewable energy on site.

Accordingly, the proposal is considered to accord with national and local objectives for energy efficiency, carbon reduction and sustainable development and should be supported from an energy and climate change perspective.