

50 Beach Road, Emsworth – Sustainability and Energy Statement

Cover Storey
Architects

19 October 2026

Issue for planning

Application	APP/26/00616
Site	50 Beach Road, Emsworth, PO10 7HR
Proposal	Demolition of existing detached dwelling and garage outbuildings and construction of new detached dwelling with garage and ancillary accommodation
LPA	Havant Borough Council

1. Introduction

This statement responds to the comments of the Council's Principal Sustainability Officer dated 23 September 2026. Those comments acknowledged the measures described in the Design and Access Statement, but asked for more detail on how the fabric-first approach and energy hierarchy are applied, and on the carbon reduction achieved on site.

The statement sets out how sustainability has shaped the design of the new dwelling, from its orientation and form to its envelope, heating and renewable energy. It explains how the design reduces energy demand, supplies heat efficiently without fossil fuels and generates renewable electricity on site. It also addresses overheating, flood resilience, green infrastructure and resource efficiency in relation to Core Strategy Policies CS13 and CS14.

The wall, roof and floor U-values have been calculated for the proposed constructions to the standard required for Building Regulations purposes. The energy and carbon savings for the dwelling as a whole are quantified through an indicative assessment, which will be confirmed through the statutory energy assessment at RIBA Stage 4.

2. Policy context

Core Strategy Policy CS13 (Green Infrastructure) supports the inclusion and enhancement of green infrastructure. Proposals should show a multi-layered approach to biodiversity, flood management, climate adaptation, overheating and social value.

Core Strategy Policy CS14 (Efficient Use of Resources) expects development to incorporate renewable energy, achieve higher levels of carbon reduction and make provision for waste management, unless proven to be financially or technically unviable.

The Council's Climate Change Strategy and Action Plan sets targets for net zero and expects new development to follow a fabric-first energy hierarchy. This means reducing demand through orientation, fenestration, ventilation and insulation before applying low-carbon and renewable technologies.

The Future Homes Standard was introduced through the Building Regulations etc. (Amendment) (England) Regulations 2026 (SI 2026/335) and the 2026 edition of Approved Document L. The principal commencement date is 24 March 2027, subject to transitional provisions described in MHCLG Building Circular 01/2026. The relevant standard will be determined by the timing of the building control application and commencement of work.

Regardless of the applicable standard, the proposal has been designed around the same principles as the Future Homes Standard: a high-performance envelope, low-carbon heating and on-site renewable generation.

3. Be Lean: reducing energy demand through design

The first and most durable carbon savings come from the architecture itself: how the house is oriented, shaded, lit and enclosed.

Orientation and layout

The principal living spaces open onto the south-facing garden. The largest areas of glazing are on the south elevation, where they admit useful low winter sun. The north elevation is predominantly rendered, with smaller and vertical slot windows that limit heat loss from the coldest face while still bringing daylight into circulation spaces. A dedicated ground-floor study supports home working.

Shading and daylight

The first floor and the zinc-clad canopy project over the south-facing ground-floor glazing. They are positioned to shade high summer sun while allowing lower winter sun to reach the living spaces. Rooflights and generous glazing provide good natural daylight, reducing reliance on artificial lighting.

Thermal mass

Masonry inner leaves, wet plaster and a screeded ground floor give the house substantial thermal mass. This stores solar and internal heat gains and moderates temperature swings in both winter and summer.

Building envelope

The wall, roof and floor constructions have been selected for thermal performance, robustness on an exposed coastal site, airtightness and long service life. Their U-values have been calculated for the current design. Each is better than the corresponding notional dwelling value in Approved Document L.

Element	Construction	Design U-value (W/m ² K)	Approved Document L notional value (W/m ² K)
External walls	Hemelite masonry cavity wall; 120 mm partial-fill insulation, 50 mm clear cavity (rendered build-up)	0.167	0.18
Pitched roof	Between- and above-rafter insulation	0.106	0.11
Ground floor	Insulated suspended floor with screed	0.123	0.13

The U-values have been calculated for the proposed wall, roof and floor constructions and demonstrate performance better than the corresponding Approved Document L notional values. The rendered wall construction provides the representative basis for the external wall calculation; the timber-clad elevations will be developed to achieve comparable thermal performance.

The remaining envelope elements will be developed at RIBA Stage 4 on the same fabric-first principles:

- Windows and glazed doors: thermally broken aluminium with high-performance glazing. High-performance thermally broken aluminium glazing is proposed, with whole-element U-values to be confirmed through the detailed selection of window and door systems.
- Flat and green roofs: to be insulated to a standard consistent with the pitched roof.
- Airtightness and ventilation: the wet-plastered masonry inner leaf will provide the primary airtightness layer, with continuity detailed at openings, structural junctions and service penetrations. MVHR forms the preferred ventilation strategy, working with the airtight building envelope to provide controlled fresh air and minimise ventilation heat losses. The detailed system design and airtightness targets will be coordinated during Stage 4. A mechanical extract

arrangement without heat recovery is included in the energy assessment solely as a comparative sensitivity case, not as a proposed alternative.

4. Be Clean: efficient, fossil-fuel-free heating

The dwelling will be all-electric, with no gas connection. Space heating and hot water will be provided by an air source heat pump, as described in the Design and Access Statement.

The design and the heating system work together. Because the envelope reduces heat loss, the house can be kept comfortable with low water temperatures. This is the condition in which a heat pump operates most efficiently. The screeded ground floor suits low-temperature underfloor heating, and the thermal mass allows the system to run steadily rather than in short bursts.

Controls will be developed at Stage 4 to support efficient operation, for example weather compensation and scheduling of hot water heating to coincide with solar generation. Any provision for active cooling would be considered during detailed services design. The passive measures in Sections 3 and 7, however, are intended to make active cooling unnecessary in normal use.

As the electricity grid continues to decarbonise, the carbon emissions associated with the heat pump will continue to fall over the life of the building. A fossil-fuel system cannot achieve this.

5. Be Green: on-site renewable generation

A roof-mounted solar PV array of approximately 7.65 kWp is proposed, with battery storage.

The panels are integrated into the roof design of both the house and the garage and annexe building, on the east, west and south-facing slopes shown on the roof plan and elevations. Spreading the array across orientations produces generation through the morning and evening as well as at midday. This matches household demand more closely than a single south-facing array.

The proposed battery will store daytime generation for use later in the day. This increases the proportion of solar electricity used on site and reduces reliance on the grid at times of peak demand. The battery capacity will be confirmed at Stage 4. Surplus generation can also be used for electric vehicle charging, and otherwise exported to the grid.

Estimated generation is set out in Section 6.

6. Energy and carbon assessment

Indicatively, the proposed envelope, preferred MVHR strategy and air source heat pump together reduce regulated operational carbon emissions by about 80–85% compared with an equivalent gas-heated home, before any contribution from solar PV. This section explains the planning-stage estimate and how it will be verified.

Status of the figures

Category	Covers	Basis
Calculated design information	Wall, roof and floor U-values	Calculated for current design
Indicative estimates	Heating demand, energy, carbon and PV yield	Modelled using stated assumptions
To be confirmed	Statutory performance, PV yield and airtightness	Technical design and completion checks

Method and reference case

The estimate uses a monthly heat-balance calculation following the principles of SAP and BS EN ISO 13790. Geometry is taken from the planning drawings, and solar irradiance from SAP Appendix U for the Southern England climate region.

Carbon factors are those of SAP 10.2 (gas 0.210 and grid electricity 0.136 kgCO₂/kWh). Only regulated energy is included: space heating, hot water, ventilation fans, pumps and lighting.

The indicative energy and carbon assessment relates to the main dwelling (approximately 227 m²), which accounts for the substantial majority of the proposed heated accommodation. The ancillary guest accommodation (approximately 30 m²) is not separately modelled at this stage, but will be developed in accordance with the same fabric-first and low-carbon design principles. The garage and first-floor store are unheated and do not form part of the assessed thermal envelope. PV generation is reported for the whole array, including the panels on the garage and annexe roof.

The proposal is compared with a reference home. This is a comparator chosen to show the effect of the design decisions, not the statutory notional dwelling, and the results are not a Building Regulations compliance margin. The reference home has the same size, shape and glazing as the proposal, and:

- walls, roof, floor and windows at the Approved Document L notional values (0.18, 0.11, 0.13 and 1.2 W/m²K);
- airtightness of 5 m³/(h·m²) at 50 Pa, with natural ventilation and extract fans;
- a gas boiler of 89.5% efficiency, and no renewable generation.

Design decisions not yet made are tested as ranges rather than assumed:

- window U-value of 1.2 to 1.4 W/m²K;
- airtightness of 3 to 5 m³/(h·m²);
- MVHR is the preferred design strategy; mechanical extract ventilation without heat recovery is modelled for comparison only, not as a proposed alternative;
- heat pump seasonal efficiency of 2.8 to 3.5 for heating.

Results

Illustrative case	kg CO ₂ /year	Compared with reference
Gas-heated comparator, no PV	c. 2,960	—
Be Lean: proposed envelope with MVHR, gas comparator	c. 2,080–2,520	15–30% lower
Be Clean: proposed envelope with MVHR and ASHP	c. 460–630	79–85% lower

Be Lean. The walls, roof and floor all improve on the notional values, and the preferred MVHR strategy substantially reduces ventilation heat loss. With MVHR, indicative space-heating demand is about 20–40% below the gas-heated reference across the glazing and airtightness ranges tested, and about 30–40% below at an airtightness of around 3 m³/(h·m²) at 50 Pa. For comparison only, mechanical extract ventilation without heat recovery would give heating demand broadly similar to the reference in less favourable circumstances. This demonstrates why MVHR is preferred; the extract-only scenario is not an alternative proposal.

Be Clean. Replacing the hypothetical gas boiler with an air source heat pump gives the largest single step, bringing the total reduction to approximately 79–85% against the reference across the MVHR design sensitivity range. These are indicative figures, not a statutory compliance margin; performance will be verified through the design-stage energy assessment.

Be Green. The 7.65 kWp array is estimated to generate about 6,100 to 7,700 kWh a year, assuming 800 to 1,000 kWh per kWp for the mixed orientations. At the SAP 10.2 factor, this is equivalent to about 0.8 to 1.0 tCO₂ a year of grid electricity displaced. The proposal's estimated regulated electricity use is about 3,300 to 5,400 kWh a year. Generation peaks in summer and heating demand in winter, so the home will still import electricity in winter. Annual generation of a similar order to regulated use therefore does not amount to net-zero operation. The battery will increase the share of generation used on site.

Limitations and confirmation

The estimate has limitations:

- envelope and glazing areas are measured from planning drawings (about ±15%);
- solar irradiance is taken from SAP Appendix U; external temperatures are approximated;
- heat pump and PV performance are assumed;
- the method is not SAP or the Home Energy Model.

The assessment demonstrates the anticipated scale of energy and carbon savings arising from the proposed design. It uses established monthly heat-balance principles and documented solar radiation data, with appropriate allowances for elements that will be finalised during technical design.

The statutory energy assessment at RIBA Stage 4 will establish compliance with the applicable Building Regulations, including the relevant carbon emissions, primary energy and fabric efficiency targets.

7. Overheating, climate and flood resilience

The design manages summer heat primarily through architecture rather than equipment.

- Shading: the projecting first floor and canopy shade the main south-facing glazing in summer.
- Ventilation: openable windows on opposing elevations allow cross-ventilation and night-time cooling, assisted by coastal breezes.
- Thermal mass: the exposed masonry and screed absorb daytime heat gains.
- Green roofs and planting: the green roofs reduce heat gain through the single-storey roofs, and trees and planting shade the garden and terraces.

The projecting building elements, solar shading and opportunities for cross-ventilation establish the passive overheating strategy. This will be refined and assessed against Approved Document O during technical design, alongside the final glazing specification.

Coastal exposure

The envelope uses materials suited to an exposed coastal location: masonry, render, natural slate, larch and charred larch, and zinc. These are durable, need little maintenance and have long service lives.

Flood risk

The site lies within Flood Zone 3. Flood risk is addressed by the Flood Risk Assessment prepared by CGS Civils (reference C3780, Revision 1, 14 April 2026). This statement does not repeat or modify that assessment, and the measures it identifies form part of the proposal.

8. Green infrastructure and biodiversity

Green infrastructure is integrated into the building as well as the garden. Each element serves several purposes, in line with the multifunctional approach of Natural England's Green Infrastructure Framework.

- Native-species green roofs over the single-storey elements (drawings V03-301 and V03-302) provide habitat and slow rainwater run-off. They also reduce summer heat gain and soften views from the first-floor rooms and neighbouring properties.
- Raised terrace planting and the planted reading terrace bring greenery and pollinator habitat close to the house.
- The south-facing garden remains predominantly soft landscape, supporting infiltration, biodiversity and outdoor amenity.

Biodiversity Net Gain and ecology

The Council's ecologist has accepted that the development is exempt from mandatory Biodiversity Net Gain under the de minimis exemption. The ecologist has recommended bat and bird enhancement features, and these will be incorporated

into the scheme. The ecologist has also recommended a Construction Environmental Management Plan before commencement. One will be prepared to manage the effects of construction, including dust, run-off, noise and lighting.

9. Resource efficiency

Water

Water-efficient sanitaryware, taps and showers will be specified at Stage 4, and rainwater can be collected for garden use. The applicable water efficiency standard will be confirmed through Building Regulations.

Materials

The palette of masonry, render, natural slate, larch and zinc has been chosen for durability and long service life on an exposed coastal site. This is intended to reduce maintenance and premature replacement of building components over the building's life. The intention is to source timber from responsibly managed forests.

Demolition and construction waste

The existing dwelling and garage outbuildings will be demolished. Demolition and construction waste will be managed by the contractor alongside the Construction Environmental Management Plan, with suitable materials reused or recycled wherever practicable.

Operational waste

A dedicated bin store beside the entrance (drawing V03-300) accommodates the Council's refuse and recycling containers.

Sustainable transport

Electric vehicle charging will be provided in accordance with Approved Document S, and can draw on surplus solar generation. The garage offers secure storage for bicycles, and the dedicated study supports home working, reducing the need to travel.

10. Summary of design measures

Design measure	Environmental benefit
South-facing living spaces and glazing	Useful winter gains and daylight
Projecting first floor and canopy	Summer shading
Masonry and screed thermal mass	Temperature moderation
Calculated opaque fabric U-values	Reduced transmission loss
MVHR preferred, coordinated airtightness	Reduced ventilation heat loss
ASHP and low-temperature heating	Low-carbon heating without on-site fossil fuel
7.65 kWp PV and battery	On-site generation and storage
Green roofs, terraces and garden	Biodiversity, rainwater and amenity
Bat and bird features	Ecological enhancement
Durable coastal materials	Long service life
CEMP	Managed construction impacts
EV charging, cycle storage and home study	Reduced travel emissions

11. Conclusion

Sustainability has informed the design of 50 Beach Road from the outset, rather than being treated as a series of technologies added to the completed architecture.

The orientation, arrangement of accommodation, passive solar shading, thermal mass and high-performance building envelope work together to reduce energy demand. The preferred MVHR strategy complements these measures by limiting ventilation heat losses, while an air source heat pump provides efficient, fossil-fuel-free heating and hot water.

The indicative energy assessment demonstrates a reduction in regulated operational carbon emissions of approximately 79–85% compared with an equivalent gas-heated dwelling, before accounting for the proposed 7.65 kWp photovoltaic installation and battery storage.

The green roofs, landscaped areas and ecological enhancements also contribute to biodiversity, surface water management and climate adaptation. Taken together, these measures demonstrate how the proposal responds positively to the objectives of Core Strategy Policies CS13 and CS14.

The Sustainability Officer's helpful comments have provided an opportunity to set out the design approach and its anticipated performance in greater detail. The statutory energy assessment will follow as part of technical design, confirming performance against the applicable Building Regulations requirements.