

Sustainability



Energy Strategy

A dynamic energy assessment has been carried out to demonstrate how the targets for regulated CO2 emissions reduction over and above Building Regulations Part L 2021 will be met.

A sustainability assessment of the new buildings results in an estimated BREEAM score of 72% and therefore an Excellent rating. This outcome confirms that the development will meet the sustainability standards set out by Wiltshire Council, delivering a high-quality, future-ready scheme that contributes positively to the transition to a low-carbon built environment.

Summary of Energy Strategy

The MEP (Mechanical, Electrical, and Plumbing) strategy at Eastleigh Court focuses on low-energy design, renewable technologies, and future-proofed systems. It supports the sustainability ambitions of the project while offering modern comfort and efficiency across the estate.

- Entire site is fossil-fuel-free, using heat pumps only
- Exceeds Part L 2021 energy and carbon targets by ~31%
- External ASHP array provides low-temperature heat (40–50°C) and Serves Court, Pavilion, events building, and pool
- Water Source Heat Pumps (Secondary – Court only)
- WSHPs upgrade ASHP heat to 65–75°C for compatibility with radiators allows reuse of infrastructure with minimal impact to historic fabric

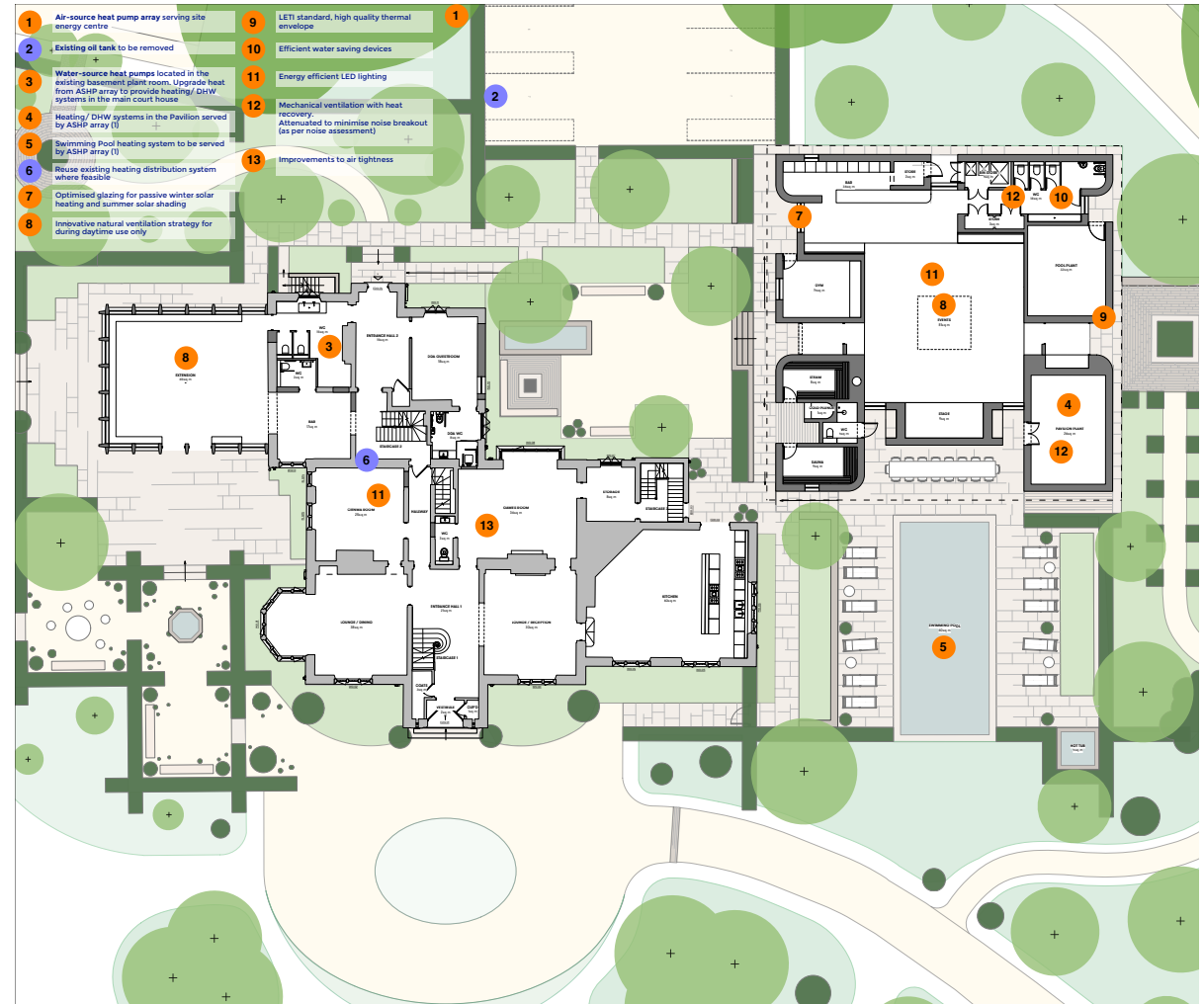
- Underfloor heating in Pavilion/events for high efficiency
- Passive Cooling
- Deep roof overhangs, recessed/low-g glazing, high thermal mass, and natural ventilation
- Demand-controlled based on occupancy and internal conditions
- MVHR in gym and WCs; AHU with cooling in events space
- All mechanical systems are demand-driven for efficiency
- All pool heating demands served by the main ASHP array
- Zero on-site combustion, major carbon reduction
- High comfort, low energy use, and long-term resilience

Energy Strategy

Site Plan

Key

- 1 — Air-source heat pump array serving site energy centre
- 2 — Existing oil tank to be removed
- 3 — Water-source heat pump (in basement) to upgrade heat from ASHPs array to provide heating/ DHW systems in the main court house
- 4 — Heating/ DHW systems in the Pavilion served by ASHP array (1)
- 5 — Swimming Pool heating system to be served by ASHP array (1)
- 6 — Reuse existing heating system
- 7 — Optimised glazing for passive winter solar heating and summer solar shading
- 8 — Innovative natural ventilation strategy for during daytime use only
- 9 — LETI standard, high quality thermal envelope
- 10 — Efficient water saving devices
- 11 — Energy efficient LED lighting
- 12 — Mechanical ventilation with heat recovery
- 13 — Improvements to air tightness



Site plan showing site wide energy strategy. Extract from the Sustainability Statement.



M&E Strategy

Substation

A new substation is required to meet the renewable electrical heating and cooling needs of Eastleigh Court. It is positioned near the south entrance. The location sits outside all tree root protection zones, avoids visual impact on key views whilst remaining practical for access and maintenance. The location takes into account SSEN substation requirements the key of which are summarized below.

- A dedicated vehicular and pedestrian access route to the substation from the driveway/public highway
- The access route must be properly surfaced and wide enough for maintenance vehicles/plant.
- Unobstructed clearance around all sides of the substation enclosure. Allow a 5 × 5m area for the substation plinth with an additional 3×5m area in front of the enclosure to be kept clear of obstructions for cable route/access.
- All trenching between the court and the substation will be under the road and will avoid the tree root protection zones



-  Substation Location
-  Tree root protection zone
-  Red line boundary

The electricity substation is located behind an existing mature hedge which is set back from Bishopsgate Road and bends around into the existing south entrance.

Two low quality category U trees (T151 and T152) have already been removed following S211 notices which create a suitable clearing for the substation. One further low quality category C2 tree (T207) is also to be removed, meaning that the substation will not affect any tree root protection zones in that area. See Arboricultural Impact Assessment for more details.

Additional evergreen hedging is proposed along the east side of the existing south entrance road, further screening the substation from view from both guest vehicles exiting via the new gates and cars driving past the site south on Bishopstrow Road.

Note that detail design of the substation location and access requirements is subject to input from SSEN which will happen in the next phase of the project



Photo from Bishopstrow Road looking south with location of substation indicated in pink



Landscape Plan showing substation and existing and proposed hedge screening



A sustainability and energy report has been developed in collaboration with both the MEP engineers and the structural engineers. They have been involved in the project from the early stages, meaning that sustainability has been designed into the scheme rather than needing to be bolted on at the end.

The structure of The Pavilion is predominately timber which will be locally sourced. The timber structure has been designed assuming a low grade of softwood in order to keep options open for the timber species. The structure has been arranged as far as possible to keep timber sizes down and avoid using engineered timber products. This will make it easy to transport and assemble on site.

Materials with low embodied carbon have been chosen throughout. An embodied carbon calculator has been used by the structural engineers to compare the wall build-ups proposed with standard brick and block cavity wall construction. The timber frame and stone wall build-up used for the extension to Eastleigh Court is 46 kgCO₂e/m. This is much less than a standard wall construction which is at 84 kgCO₂e/m.

A plan to mitigate against construction waste is to be developed with the input of a specialist timber subcontractor at the next stage of design. The superstructure is already conceived to make use of standard size solid timber sections so as to minimise on-site cutting and waste. Typical spacing of rafters and wall studs has been adopted throughout the timber structure to match standard plywood sheet

sizes, to minimise the need for on-site cutting. Prefabricated trusses are proposed where concealed in the pavilion roof which will reduce site carpentry requirements.

Optimization of the timber superstructure, substructure and envelope has been carried out to increase the opportunities for modularization and material efficiency. This limits the requirement for unique elements and reduces quantity of wastage. The timber has been designed to work with a low-grade softwood and uses standard timber sizes throughout. This way of construction has a lower carbon footprint than if engineered timber was used.

The exposed joists in the pavilion are repetitive which reduces wastage. All masonry walls will be set out to standard block or brick dimensions, reducing the need for cutting.



Thermal Efficiency

Wall, floor and roof build-ups have all been developed to adhere to the Leti building standard for operational energy, ensuring that The Pavilion and extension perform better than building regulations in terms of thermal efficiency.

The construction strategy now adopts a timber-framed wall build-up with high-performance insulation and locally sourced limestone cladding, providing an inherently low-carbon solution. This lightweight, fabric-first approach achieves excellent thermal performance, reduces embodied carbon compared with traditional masonry, and supports the overall sustainability objectives of the project.



Operational energy

Implement the following indicative design measures:

Fabric U-values (W/m².K)

Walls	0.12 - 0.15
Floor	0.10 - 0.12
Roof	0.10 - 0.12
Windows	1.0 (triple glazing) - 1.2 (double glazing)
Doors	1.2

Fabric efficiency measures

Air tightness	<1 (m ³ /h. m ² @50Pa)
Thermal bridging	0.04 (y-value)
G-value of glass	0.4 - 0.3

Power efficiency measures

Lighting power density	4.5 (W/m ² peak NIA)
Lighting out of hours	0.5 (W/m ² peak NIA)
Tenant power density	8 (W/m ² peak NIA)
ICT loads	0.5 (W/m ² peak NIA)
Small power out of hours 2	(W/m ² peak NIA)

System efficiency measures

MVHR	90% (efficiency)
Heat pump SCOP	≥ 2.8
Chiller SEER	≥ 5.5
Central AHU SFP	1.5 - 1.2 W/l.s
A/C set points	20-26°C

Window areas guide (% of wall area)

North	25-40%
East	25-40%
South	25-40%
West	25-40%

Balance daylight and overheating

Include external shading

Include openable windows and cross ventilation

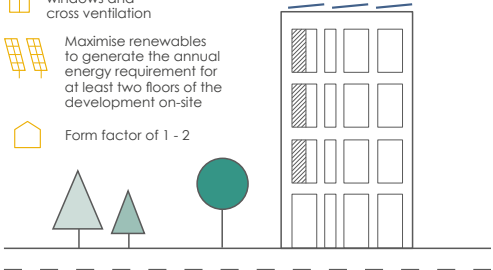
Maximise renewables to generate the annual energy requirement for at least two floors of the development on-site

Form factor of 1 - 2

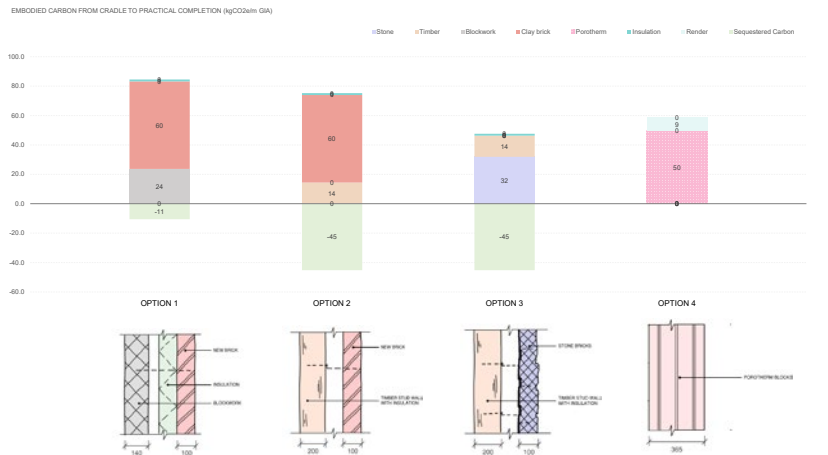
Reduce energy consumption to:

55 kWh/m².yr
Energy Use Intensity (EUI) in GIA, excluding renewable energy contribution

Reduce space heating demand to: 15 kWh/m².yr



Exert from the Leti Climate Emergency Design Guide for commercial buildings



Carbon calculator used in collaboration with structural engineer looking at wall build-up options