

RIBA response to the NHS Net Zero – call for evidence

The importance of whole life carbon

The NHS must take a whole life carbon approach to consider the environmental impact of each of their buildings from design, through to use and reuse. Taking a whole life carbon approach involves considering both operational energy (the amount of actual energy a build uses) and embodied carbon.

Embodied carbon is the carbon emitted from the processes associated with sourcing materials, fabricating them into products, transporting and assembling them. It also includes the emissions from maintenance, repair, replacement, final demolition and disposal.

To fully understand the energy efficiency of a building it is necessary to look at the relationship between a building's operational energy and embodied emissions. architects, surveyors and engineers are best placed to help understand this relationship and they should be employed to calculate the operational energy and embodied carbon from the outset of the project.

The levels of operational energy and embodied carbon of new NHS buildings should be in line with the [RIBA 2030 Climate Challenge](#). The Challenge sets targets for operational energy, embodied carbon and potable water usage for 2020, 2025 and 2030 for non-domestic buildings. Achieving these targets will help the NHS work towards net zero.

In September 2019, the UK Government announced its new Health Infrastructure Plan. This included funds to build new hospitals, modernise the primary care estate, and help eradicate critical safety issues in the NHS. The Government promised to spend £2.8 billion on building six new hospitals by 2025. The RIBA welcomes this commitment to build new hospitals and strengthen the NHS, however, these new buildings cannot have a negative impact on the environment. It is essential to ensure the whole life carbon of any new NHS building is considered from the outset.

For existing NHS buildings that may no longer be in use, the NHS should consider how best these buildings can be retrofitted and converted to preserve the embodied carbon.

Considering whole life carbon from the outset includes prioritising the use of low carbon materials, encouraging the reuse of existing materials, and sourcing materials locally where possible. This, coupled with quality procurement methods, will help mitigate the impact of NHS buildings on the environment.

Understanding how your building works and learning from past experiences

Post Occupancy Evaluation (POE) must become firmly embedded in all NHS projects to help increase the energy efficiency its buildings, reduce operating costs and improve the wellbeing of users.

Buildings across the UK are responsible for 40 per cent of carbon emissions; carbon is created throughout the whole building lifecycle, from strategy, to technical delivery, use and reuse.

Reducing the amount of carbon emissions from the built environment will help tackle the climate emergency. But before improvements can be made, clients need to understand how much energy a building uses. The current lack of data makes it difficult to understand where and how improvements on energy efficiency in a building can be made.

Post Occupancy Evaluation is a key means of obtaining this essential data. POE is the process of obtaining feedback on a building's performance in use, after it has been built and occupied. By accurately measuring factors such as building use, energy consumption, water usage, maintenance costs and user satisfaction, POE allows for a process of continuous improvement.

Healthcare facilities are complex buildings due to the varying types of users, their demand for high energy, and the fact they are active 24 hours a day, seven days a week. The NHS should therefore undertake POE of all new buildings to understand:

1. How well a building is actually performing compared to its design targets and whether the desired outcomes have been achieved.
2. If there are items that need attention or fine tuning during the Defects Liability Period. POE better equips the project team with the focus needed to maximise building performance prior to the conclusion of the building contract.
3. Any lessons learnt can provide valuable feedback that can be used on future projects, 'closing the loop' that feeds back into the beginning of a project.

The benefits of POE are not limited to new buildings; the RIBA recommends the NHS should undertake a POE of all existing buildings too. As mentioned above, POE provides information and data to inform and make improvements to a building. This is still useful for older buildings as it can identify the most effective measures to make a building more energy efficient.

Performance gaps do not just relate to energy efficiency. User satisfaction, comfort, health and wellbeing are also key performance indicators that highlight if a building is working as intended. These metrics are especially important in the health sector and a POE provides the data to help understand how well a building performs in these areas. This information can help save the NHS money through reduced operational costs.

It is important to highlight the difference between a POE and a Display Energy Certificate (DEC). All publicly owned buildings are required to obtain a DEC, which highlights the actual energy usage of a building. Whilst DEC's do provide some advice on what measures can be taken to improve the energy efficiency, this is only high-level. POE provides greater insight into a whole building's performance which includes airtightness testing or interviews with building users to help provide a thorough picture of the building's performance.