

THE USE OF AN ENVIRONMENTAL ASSESSMENT TOOL IN HEALTH CARE BUILDINGS

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Summary

This paper considers the use of the UK National Health Service (NHS) environmental assessment tool (NEAT) in the procurement of new health care facilities. In the UK, health care is managed on a regional basis by public authorities financed by, but independent of, government, known as Primary Care Trusts (PCTs). Since the introduction of the tool there has been a requirement for PCTs to use the NEAT tool and to achieve an 'excellent' rating in the procurement of new schemes. This paper also examines the issue of sustainability within Private Finance Initiative (PFI) schemes. PFI has become the first choice for the procurement of health and education buildings in the UK. Within a procurement process, sustainability is only one of large number of factors that are 'scored' in an assessment matrix; others include financial, contractual and employment issues. As a consequence sustainability is not highly weighted. Although the government assumes that sustainability is being built into new PFI schemes, the case studies indicate a haphazard approach across the PCTs.

1. Introduction

The NHS is one of the largest businesses in Europe and, with one of the largest property portfolios in the UK, should have a significant role to play in helping to achieve government's sustainability targets such as reduction in CO₂ (Jenkins, 2004). However, the NHS has a narrow perception of 'sustainability' and 'sustainable development' and admits that the main barriers to sustainable development across the NHS portfolio are the 'perceived additional costs involved and the complex, operational requirements of a healthcare facility' (NHS Estates, 2001).

In its second term the UK government has embarked on an ambitious round of investment in health and education facilities in fulfilling its promise to 'deliver' the social improvement anticipated by the electorate in the late 1990s. One vehicle to encourage a new market for investment in local care and community-based facilities is a version of PFI where the public and private sector form a joint venture company. The partners - the local health care trust and a private consortium - are given exclusive rights to design, build and run the health care facilities over a twenty-five period. The new properties typically also incorporate an expanded range of facilities such as pharmacy, community nursing and local authority services such as libraries.

In the UK there is a requirement that all government procurement should be carried out on the basis of value for money (VFM), which is typically defined as the optimum combination of whole-life cost and quality to meet the customer requirement (Sustainable Action Group, 2000). A procurement process, such as PFI, has to demonstrate the same criteria, and it might be assumed that this is implicit in such a process, as the consortia providing the facilities will examine in detail the VFM over the lifetime of a building.

2. Research objectives and methods

The research method tracked the sustainability agenda through scheme inception to building completion in a number of new PFI projects for health care facilities. Interviews were carried out with members of the design and negotiating teams of both winning and losing bidders. To obtain a client perspective a number of interviews were undertaken with the PFI scheme co-coordinators and their appraisal teams, including end

users and technical advisers. These interviews took place during the critical negotiation and financial closure phases.

3. Environmental Assessment Tool

One established UK method for assessing sustainable development is BREEAM (Building Research Establishment Environmental Assessment Method), which has been successfully developed and applied to the commercial office sector over the last fifteen years. In 2002 the NHS published (NHS Estates, 2002) its own Environmental Assessment Tool – NEAT – with the aims to:

- Raise environmental awareness within NHS facilities and services
- Estimate the environmental impact of NHS facilities and services
- Seek to establish an environmental improvement programme

It was developed from BREEAM and has many areas and credit points in common. The main categories of the assessment that are common with BREEAM are:

- Management – including the commissioning of the building, environmental management systems, staff education and training and purchasing;
- Energy – carbon emissions, heating and lighting control, energy monitoring and usage reduction facilities, use of daylight and alternative electricity tariffs;
- Transport – car parking provision, cyclist facilities, proximity to public transport facilities, distance to local amenities, green transport plan and compliance with controls assurance;
- Water – leak detection, water use monitoring, low flush toilets and grey water recycling;
- Materials – the use of materials from sustainable sources, prohibition of hazardous substances;
- Land use and ecology – to encourage the protection of ecological features and the introduction of natural habitats, reuse of sites and ecological enhancement;
- Pollution – pollution monitoring, NO_x emissions, ozone depleting substances, noise pollution and incineration practices;
- Internal environment – provision of views out of the building, a budget for green plants, high frequency ballasts on lighting, signage and artwork.

NEAT has two additional categories that identify particular aspects of health facilities:

- Social – linkages and consultation with the community, sharing of facilities, staff and patient empowerment, access for the disabled;
- Operational waste – provision of recycling facilities and waste stream analysis, staff waste interviews, storage for recycling.

All of the categories are subdivided into individual credits that are then weighted and totaled to give a final score. Tools such as NEAT and BREEAM are flexible in that they offer the design and management team a range of options to obtain credits and no individual credit is essential. The final scores are banded into broad headings of unclassified (less than 25%), pass (26-40%), good (41-54%) very good (55-69%) and excellent (over 70%) (NHS Estates, 2002).

To ensure that the tool was used on new developments there is a government requirement for PCTs to achieve an excellent rating in the procurement of new schemes and a very good rating in refurbishments.

4. Discussion of Findings

4.1 NEAT – aims and design

The stated aims of NEAT – to raise awareness on environmental issues and seek to establish an environmental improvement programme - are clearly beyond what might be achieved by the application of

an environmental benchmarking tool. The tool can provide a measure of environmental performance but cannot on its own establish an environmental improvement programme.

The tool was originally envisaged to provide both a checklist for a design team in the procurement of new buildings and also a checklist for PCT staff to apply to the existing estate to benchmark and measure subsequent improvement. The tool has essentially been designed for two different user groups with different levels of knowledge and understanding – on the one hand the professional design team involved in the construction of new multi-million pound facilities and on the other, administrative staff required to provide environmental returns government. For the latter group, the tool has to work at a relatively unsophisticated level as the staff has minimal knowledge of construction and/or building services.

4.2 The PFI bid process

In practice it has been found that the government requirement that all new health care facilities achieve a NEAT excellent rating has not been incorporated into the bid documents for recent new build PFI schemes. In some specifications the requirement for a sustainable building was absent or couched in general terms which are difficult to evaluate. For example, a tenant's requirement was specified as 'wherever possible all rooms and corridors should be naturally lit'. This is simply aspirational and almost impossible to properly assess. By contrast NEAT requires that 'all spaces occupied by patients should be day lit wherever possible' and, although this allows for spaces not being day lit, more importantly it provides a technical specification and a calculation to establish an acceptable level of lighting. NEAT removes a level of uncertainty as to what an acceptable level of natural lighting may be.

Even where the concept of sustainability is embraced by a PCT and where NEAT may be used, the research has indicated potential problems where the sites of the new facilities are provided by the PCT. Table 1 shows the breakdown of credits in NEAT, between the early strategic and planning phases and the later design, build, and operational phases:

Table 1 NEAT Credits by Stage

Stage in Project	Percentage of NEAT Credits
Strategic	7
Planning	15
Design	52
Construction	6
Operation	20
Disposal	0
Whole-life	100

The difficulty is the need for a collective responsibility for achieving credits. In the first wave of PFI schemes the sites have been identified by the PCTs. Many of the credits available for land, ecology, social and transport issues are established before the design teams start work. It is therefore extremely difficult for them to achieve an excellent rating when they are only able to influence 58% of the total credits. Under such circumstances bidding teams may only undertake to achieve an excellent rating for their elements of the work. The PCTs are accepting for pragmatic reasons the sites provided may not be optimum as far as sustainability is concerned, although in the cases studied the majority of the site were close to community facilities and scored well in the transport category (Hudson et al, 2003).

4.3 Cost Implications

Reference was made earlier to the perceived cost implication of sustainable design. The questions of whether 'sustainability' does incur additional whole-life costs, if so by how much and whether it simply changes the balance between capital and operational costs and results in better VFM are all critical (Addis and Talbot, 2001).

In the case studies it was found that achieving an excellent NEAT rating did not have a significant capital cost implication. The flexibility in the tool allows the design team to collect the 'cheapest' credits. In the case studies the advantageous sites, those coincidentally near transport hubs or community facilities, provided credits that did not have to be 'bought' in the construction process.

The selection of durable components, their life spans and the consequential ease of and frequency of maintenance are simple examples with whole-life cost implications. There are other examples, such as the factors determining energy costs, where the procurement process itself should have clearer implications for

sustainability. The incentive to reduce running costs, such as energy, will only be achieved if the procurement process places this responsibility on the provider of the facility and not the occupier. If the costs are borne by the occupier then there is little or no incentive for the provider to expend any additional capital to reduce energy consumption.

There were found to be hidden cost implications for the design team. In early schemes it was perhaps not appreciated that achieving an excellent rating would require a more careful appraisal of the design and better integration of the architecture and services. This work, and satisfying the audit trail, may have placed an additional burden on a project team that may not have been acknowledged in the fee structure.

4.4 Risk of compromise during construction

Where a NEAT excellent score has been achieved at the design stage there is a risk that this aspiration may be compromised during the construction phase. It is essential that the whole design and construction team are aware of the implications of every decision made during construction. For example where a credit has been awarded for the use of insulant which does not have an ozone depleting potential it would be easy for a less well specified insulant to be built-in as an expedient if the specified material was difficult to source.

To prevent this occurrence it is important that the responsibility for achieving the NEAT rating is clearly identified with a member of the design team, preferably the project manager who will be intimately involved with the procurement of material and any modifications to the specification. In addition it is fundamental to the success of the tool that the NEAT rating is confirmed by an independent audit on completion and includes an element of post-occupancy evaluation, otherwise the process becomes a paper exercise, divorced from the end user, and the anticipated beneficial effects will not be fully realized.

4.5 Barriers to sustainable design

As stated in the introduction, PCTs are independent of government, they are responsible for delivering health care within their locality but are allowed to establish their own priorities and manage their budget to best meet the need of their community. To impose some accountability on the PCT the government has devised a set of performance indicators to ensure that the budget is being administered effectively. As may be imagined these criteria relate to health matters, for example immunization rates. The PCT management pays close attention to the achievement of these performance indicators, unfortunately, although the government has ambitious targets for CO₂ reduction and other sustainability measures they have not ensured that these targets are built into the PCT performance indicators. As a consequence, it has been found that PCTs focus on sustainability is haphazard, it may be a concern of the management, or it may not. Where the PCT Chairman was enthusiastic about sustainable development, the bidding contractors for the PFI schemes would ensure that their proposals achieved a high NEAT score. If on the other hand there was no obvious emphasis in sustainable design the bidding teams could safely ignore it.

4.6 Development of NEAT

In the research the applicability of NEAT across the whole of the NHS estate was considered. The tool was intended to measure sustainability in all health care facilities from small doctors surgeries to major regional hospitals. The research found that with minor exceptions the tool worked well when applied to smaller premises, indicating that the issues measured and the questions asked were relevant across a wide range of facilities (Northumbria University, 2002).

Since its launch in 2002 NEAT has not evolved to take keep up with other environmental assessment tools. As an example, BREEAM for commercial offices is modified annually to take into account changes in legislation and design practice, in this way the tool can 'stretch' the design beyond minimum standards. Over the last year the Building Research Establishment and Department for Educational and Science have developed a new BREEAM for schools and a number of the lessons of the first phase of the PFI schemes for education have been incorporated into the assessment. Examples include a credit for a 'secured by design' evaluation and explicit consideration of long-term maintenance issues. These building types have much in common with smaller health care premises and many of the school credits are both applicable and up to date.

NEAT is currently ahead of standard practice in respect of technology, but to keep it abreast of developments in the wider sustainability debate it must evolve to take into account the social issues which are of increasing importance, for example a greater emphasis on community consultation that was found to be relatively absent in the research.

4.7 PFI Specifications

The PFI schemes are now in their fourth 'wave' of approximately six PCTs, it is two years since the inception of this procurement scheme for small health care facilities. The government department responsible for the specification has issued (Partnerships for Health, 2005) a revised specification that firmly requires all PCTs to achieve the government's aims of a NEAT excellent score. The fact that this instruction has been issued is perhaps a tacit acceptance of both the haphazard application of NEAT and the failure of PCTs to date to commit to the government's sustainability agenda.

5. Conclusions

To provide a conclusion it may be interesting to contrast NEAT with BREEAM. BREEAM was developed in 1990 and has slowly become accepted as the benchmark for sustainable office design in the UK. This has not been an easy achievement, it has slowly been accepted by designers, developers and occupiers over fifteen years. The breakthrough came over the past three years when government has specified that they would only occupy offices that had a BREEAM score of very good. This forced the development community to embrace sustainable design to attract the government as a client. The government had the confidence to specify BREEAM because of its pedigree and acceptance across the professions.

NEAT is equally competent as a benchmark of sustainable design and technically it has much in common with BREEAM. A problem arises in the lack of strong leadership to ensure that NEAT is applied to new developments. It would appear that NEAT has been lost in the plethora of instructions coming from government. The PCTs are working hard to achieve a lengthy list of health outcomes, work with the community and balance their budgets. In this environment the government's sustainability agenda is not critical. It should be argued however that sustainable design is fundamental to the health and wellbeing of the whole population, but it will not be fully addressed by the PCTs until it is made a measurable outcome alongside their more immediate health outcomes.

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