



Sustainable development in the NHS

Sustainable development in the NHS

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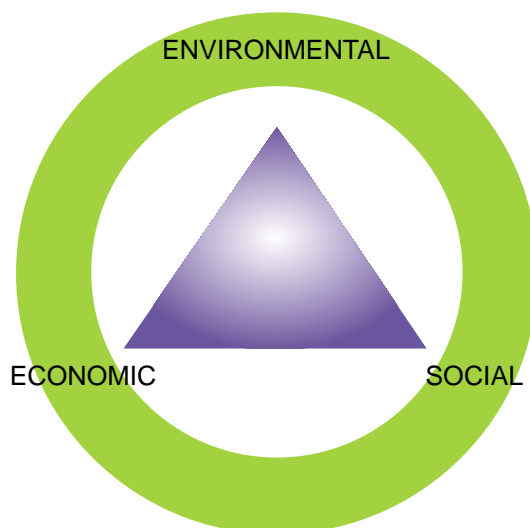
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What is sustainable development?

“At its heart is the simple idea of ensuring a better quality of life for everyone now and for generations to come”

A Better Quality of Life, DETR

ALBANY LODGE, WEST HERTS COMMUNITY HEALTH NHS TRUST: PHOTOGRAPH COURTESY MAAP



Executive summary

A sustainable NHS will mean improved working environments, greater cost savings, better service to the community and reduced environmental impact. 'Sustainable development in the NHS' was written to assist those involved in providing, managing and using NHS healthcare facilities to work towards sustainability. It aims to present a wide range of information on sustainable development in an understandable and user-friendly way.

An organisation as large as the NHS has many different priorities and pressures. This document does not seek to add to these pressures, but instead, to demonstrate how sustainability lies at the heart of many other programmes and can greatly enhance their long-term benefits.

This document will help the NHS in the consideration of sustainable development principles with the use of guidelines, samples, case studies, proformas and checklists.

As a reference document, 'Sustainable development in the NHS' is not designed to be read from cover to cover; it is expected that the reader will refer instead to relevant sections as and when they are required. A hierarchical wayfinding diagram is included to assist navigation through the document. 'Sustainable development in the NHS' should be read in conjunction with the recent 'New environmental strategy for the Health Service' (NHS Estates).



CENTRAL MIDDLESEX HOSPITAL AMBULATORY CARE AND DIAGNOSTIC CENTRE: AVANTI ARCHITECTS (PHOTOGRAPH: NICHOLAS KANE)

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Contents

Executive summary
Acknowledgements

PART I – INTRODUCTION

Why read this guide? page 4
Who should read this guide? page 4
Key actions and considerations page 4
How to read this guide page 5

1. What is sustainable development? page 6

The NHS and sustainable development

2. Why be sustainable? page 9

Direct benefits
Indirect benefits
Policy drivers

3. Making it happen page 13

Approaching sustainable development
Overcoming barriers to sustainable development
Case studies
Measuring progress

PART II – PRACTICAL GUIDANCE

4. Sustainable development considerations for NHS estate strategies page 23

5. Planning page 25

Introduction
Legislative provisions
Main land use principles
Development plans and their implications for the NHS estate
Representations to Local Plans
Case studies

6. Design and construction page 29

Introduction
Design
Construction
Procuring sustainable buildings
Case studies

7. Operational activities page 42

Introduction
Energy management
Water management
Waste
Transport
Case studies

8. Purchasing and supply page 59

Introduction
Developments in NHS purchasing and supply
Sustainable purchasing and supply in the public sector
Incorporating sustainable development criteria in purchasing
Contractor management
Specific products or services
Case studies
Purchasing initiatives within Government departments

9. Partnerships page 66

Introduction
Consultation techniques
Increasing local participation in health promotion
Working with other local services
Case studies

PART III – FURTHER INFORMATION

10. Summary checklists of issues to consider for each topic area page 73

11. Guidance on developing performance indicators **page 79**

Government indicators of sustainable development for the UK
 Operational indicators
 Sectoral indicators
 Possible indicators of sustainable development for the NHS

12. Example policies and forms **page 83**

Environmental policy (example from East Kent Hospitals NHS Trust)
 Register of environmental aspects (example from East Kent Hospitals NHS Trust)
 Register of relevant environmental legislation (example of emissions to air)
 Objectives and targets form
 Environmental management procedure proforma
 Example staff travel survey form
 Audit of site releases to air and water and waste arisings

13. HM Treasury and DETR guidance on environmental issues in purchasing **page 96**

Introduction
 Policy
 The EC procurement rules
 Specifying requirements
 Procuring goods and services
 Accountability
 Value for money
 Other issues
 Further guidance

14. Sources of further information **page 101**

Planning
 Design
 Construction
 Operational activities
 Procurement
 Participation

APPENDICES

Appendix A: List of abbreviations **page 107**

Appendix B: List of some relevant legislation **page 109**

Appendix C: References **page 111**



THE NEW PRINCESS MARGARET HOSPITAL, SWINDON: CAD IMAGE OF HOSPITAL POST-REFURBISHMENT BY IMPACT INTERACTIVE, PROVIDED COURTESY CARILLION PLC

Part I Introduction

Introduction

WHY READ THIS GUIDE?

Sustainable development is about taking a holistic view of all activities, considering their environmental, social and economic implications. This guide illustrates how sustainable development concepts and practices can help the NHS to gain most value from its estate and contribute to improving the quality of life in the UK. Although sustainable development is only one of the many issues and priorities for the NHS, it can bring significant benefits to all the NHS's activities. This guide aims to show:

- how the activities of the NHS are vital to sustaining national growth;
- how the NHS impacts on sustainable development, socially, economically and environmentally; and
- how the sustainability of the NHS can be increased through its estate management, bringing:
 - cost savings;
 - better working environments;
 - better service to the community; and
 - reduced environmental impact.

Hospitals are large sites that undertake a wide range of activities, attract a great many visitors and use large amounts of resources. Their impacts on their surroundings are therefore large and diverse. The impacts of smaller facilities used for primary or intermediate care are proportionally less, however they may still use resources and generate large quantities of clinical and other wastes. For example, around 100,000 tonnes of clinical waste are produced by NHS trusts each year (figures from the 'Waste Strategy 2000 for England and Wales: Parts 1 and 2', DETR), with an additional 100,000 to 200,000 tonnes coming from other sources (predominantly GPs and dentists, nursing homes and private sources).

This guide provides information that can help in the consideration of sustainable development during estate

planning, design, construction and operational activities. Case studies show how hospitals, clinics and other non-healthcare organisations have applied these techniques and the benefits they are receiving from them.

WHO SHOULD READ THIS GUIDE?

'Sustainable Development in the NHS' is aimed at those involved in providing, managing and using NHS healthcare facilities. It targets managers and staff in all sectors of the NHS including primary care. Sustainable development is not something that can be realised by top-down approaches alone; to be effective, it needs the support of everyone involved in providing a health service.

This guidance is directly applicable to England. Although the devolved countries will find much that is relevant here, they should refer to their own legislation.

KEY ACTIONS AND CONSIDERATIONS

To maximise the benefits gained from incorporating sustainable development into the estate management process the following key actions are important:

- considering sustainable development at each stage of the estate life-cycle (at the strategic, planning, design, construction and operational stages);
- using sustainability appraisal and a management systems approach to ensure that environmental and other sustainability issues are addressed in an integrated manner;
- considering whether existing or planned estate performs against sustainability criteria for:
 - accessibility (including transport);
 - energy efficiency;
 - water efficiency;
 - waste management;
 - procurement of goods and services;
 - integration with other services and the local community; and

All documents, programmes and other information cited in the text are fully referenced in [Appendix C](#).

- developing action plans for ensuring that performance against key criteria improves and that a sustainable development approach to estate management permeates the organisation.

A list of actions to implement sustainable development in the NHS is included at [paragraphs 3.1–3.2](#). Advice on the specifics of implementing sustainability in practice is provided in [Parts II](#) and [III](#).

HOW TO READ THIS GUIDE

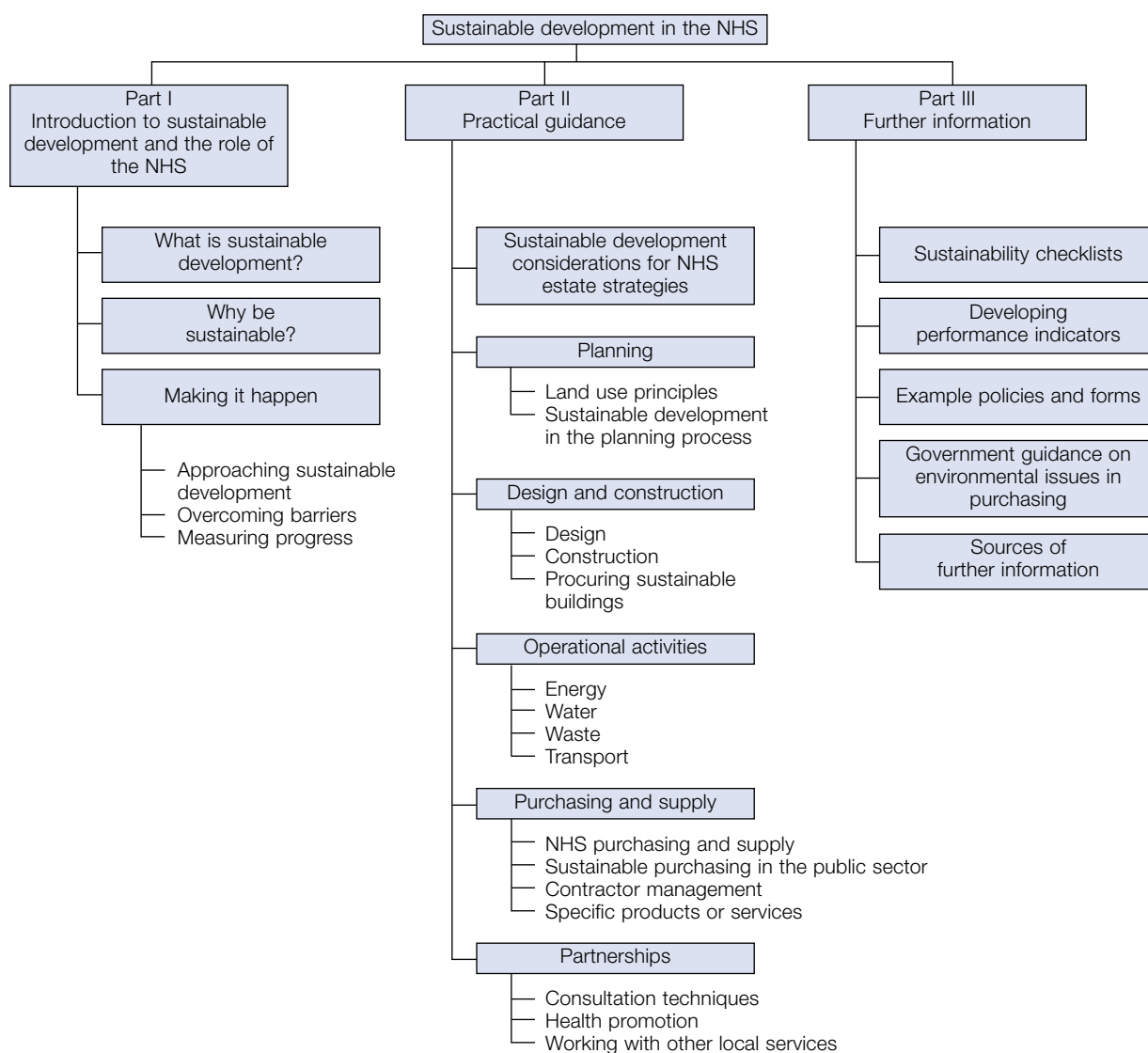
It is not intended that this guide be read from cover to cover. Because of the breadth of sustainable development as a topic, ‘Sustainable development in the NHS’ presents a wide range of information from energy-efficient heating and lighting to community consultation techniques. While it is essential that sustainable development challenges are addressed in an

integrated fashion, not every chapter of this guide will be relevant to all readers. Figure 1 outlines the content and can be used to identify areas of particular interest.

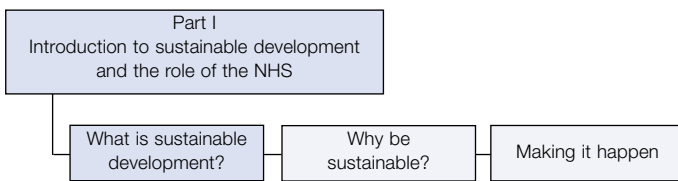
- Most of Part I will be relevant to everyone working in the NHS, as it provides an overview of sustainable development, why it is important to the NHS and to the country as a whole, and how to begin to incorporate it into estate management.
- Part II provides some basic technical information on the role of sustainable development at different stages in the life of NHS estates.
- Part III provides sources of more detailed information for those wishing to pursue topics further.

Full titles for acronyms and abbreviations used are presented in [Appendix A](#).

Figure 1 Content of this guide



1 What is sustainable development?



“At its heart is the simple idea of ensuring a better quality of life for everyone now and for generations to come”

‘A Better Quality of Life’, DETR

1.1 Sustainable development is the integration of social, economic and environmental objectives, and is a unifying theme of current Government policy. It is spearheaded by the UK sustainable development strategy, ‘A Better Quality of Life’, which lays out the four objectives that need to be met to bring about long-term improvements in people’s quality of life:

- a. social progress that meets the needs of everyone;
- b. effective protection of the environment;
- c. prudent use of natural resources; and
- d. maintenance of high and stable levels of economic growth and employment.

1.2 These objectives are incorporated into all areas of Government policy, and their spirit is reflected in the Department of Health White Papers ‘The New NHS: Modern, Dependable’ and ‘Saving Lives: Our Healthier Nation’.

1.3 ‘A Better Quality of Life’ identified that the health of the population is a key component of sustainable development in the UK. This view is echoed by Gro Harlem Brundtland, Director General of the World Health Organisation (see box below). Although Dr Brundtland was primarily referring to developing countries in this statement, it is universally applicable.

“... if people’s health improves, they make a real contribution to their nation’s prosperity. In my judgement, good health is not only an important concern for individuals, it plays a central role in achieving sustainable economic growth and an effective use of resources.”

Gro Harlem Brundtland, Director General, WHO

THE NHS AND SUSTAINABLE DEVELOPMENT

1.4 The NHS plays a crucial role in ensuring national progress towards sustainability and this role is not limited to treating the sick. It must consider how it can

work to improve the nation’s wellbeing through minimising environmental harm (particularly from pollution) along with the work it does to promote healthier lifestyles. Health promotion has, of course, long been a primary focus of the NHS – but increasing sustainability will help to ensure long-term benefits can be gained from all the work that has already been done (for example through setting examples of healthy working environments, and promoting links between the health service and the community).

1.5 The NHS estate is one of the largest and most complex property portfolios in Europe (see ‘Developing an estate strategy’, NHS Estates, 1999), with sites of widely different ages and sizes fulfilling a range of functions. Its size alone means that it has significant impact on its surroundings. For example, energy consumption in English hospitals results in the annual emission of around 7.5 million tonnes of CO₂ (figure from ‘Energy efficiency in hospitals: condensing gas boilers’, BRECSU). But it is not only the larger facilities that impact on sustainability; there are opportunities for improvement at all scales. With around 11,000 general practices in the UK (most of which are in England), even relatively small performance improvements could have major benefits.

1.6 In addition to its physical impacts, the NHS impacts on sustainability in many other ways. It:

- maintains the health of the population;
- is the largest employer in England, providing the working environment for over one million people; and
- commands an annual budget in England of around £40 billion.

1.7 The sustainability impacts of the NHS estate relate to its:

- location;
- construction;
- operations; and
- relationships (for example with suppliers, other local services etc).

1.8 The rest of this chapter summarises some of the main environmental, social and economic impacts of NHS estates and demonstrates that they are significant at a national level. [Part II](#) of this guidance explores these issues further, with advice on practical actions.

Environmental impacts

1.9 Most hospitals are large sites that undertake a wide range of activities, attract a great many visitors and use large amounts of resources. It is not surprising, therefore, that their potential environmental impacts are large and diverse. The environmental impact of smaller facilities used for primary or intermediate care are proportionally smaller, however they may still use resources and generate large quantities of clinical and other wastes. Around 100,000 tonnes of clinical waste are produced by NHS trusts each year (see the 'Waste Strategy 2000 for England and Wales: Parts 1 and 2', DETR), with an additional 100,000 to 200,000 tonnes coming from other sources (predominantly GPs and dentists, nursing homes and private sources).

1.10 Table 1 summarises some of the main environmental impacts of healthcare facilities.

Social impacts

1.11 The NHS is responsible for providing healthcare to everyone in England and is the country's largest employer. As such, its social impact is inherently large. The NHS's proactive work to improve public health has a major social impact on communities and individuals, enhancing their quality of life.

1.12 In addition to its health-related activities, the social impacts of healthcare facilities vary according to the size of a facility. A large hospital can be a significant source of jobs and associated local economy, while the main impacts of smaller facilities will be in its relationships with immediate neighbours and its catchment community. Enabling easy public and staff access to healthcare facilities while trying to minimise the negative impacts of car use is an important social issue for the NHS. Table 2 summarises some of the main social impacts of health services.

Economic impacts

1.13 The NHS receives a significant and growing proportion of the Government spending budget.

TABLE 1 MAIN ENVIRONMENTAL IMPACTS OF HEALTHCARE FACILITIES

Theme	Issue
Air quality	Emissions from on-site boilerhouses and on-site vehicles. Emissions from vehicles. Emissions from generation of electricity either on- or off-site. Emissions from disposal of wastes either on- or off-site. Emissions from construction activities.
Surface access	Emissions and congestion arising from the use of cars by patients, visitors, staff and delivery vehicles.
Ecology and landscape	Disruption from the presence of the facility in or near to sensitive ecosystems. Disruption and the loss of important habitats due to construction activities and site development.
Energy and resources	Use of energy and resources during construction and operations.
Waste	Production of large quantities of clinical and municipal waste.
Water	Potential contamination from chemicals and fuels stored on-site. Consumption of water for operations and construction.
Contaminated land	Contamination of land on- and off-site from spills and leakage of substances stored on-site.
Noise	Internal disruption caused by building services. Disruption caused by construction.

TABLE 2 MAIN SOCIAL IMPACTS OF HEALTHCARE SERVICES

Theme	Issue
Accessibility	Restricted access to services can prevent people receiving the healthcare they need. Access to facilities can cause local disruption through traffic congestion and disturbance. Accessibility needs to be considered through means of a transport plan.
Employment	The NHS employs over one million people and has a large associated socio-economic influence. It has significant potential to support local enterprise through its selection of service providers.
Community leadership	Healthcare providers are in a position where their activities can provide guidance, support or leadership to local initiatives, particularly health promotion.

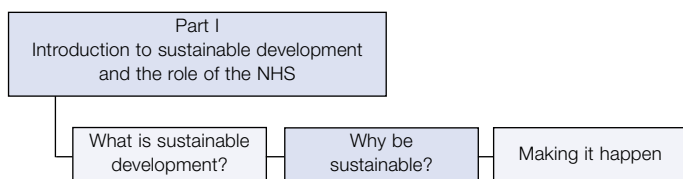
However, the economic impact of the NHS should not be thought of only in a negative sense. A healthy population is more economically active and the value created by the health service through keeping people healthy and able to contribute to life in the UK is considerable. The NHS also provides care and support for the elderly or disabled and their families, thereby enabling them to make social and economic contributions that otherwise may not have been possible.

1.14 If the NHS can maximise the efficiency of its estate management more of its funding can be spent on fulfilling healthcare aims. Any efficiencies achieved must enable at least an equivalent standard of service to be provided. While under-funding the management of healthcare estate will not bring long-term economic savings, the use of whole-life thinking in planning, designing, building and maintaining estate can bring long-term efficiencies and performance improvement (these approaches are discussed in [Part II](#) of this guidance).

PATIENT AT PRINCESS MARGARET HOSPITAL, SWINDON: PHOTOGRAPH COURTESY CARILLION PLC



2 Why be sustainable?



2.1 There are many reasons why sustainable development should be a central component of estate management for the NHS. These include the direct and rapid benefits that can accrue, longer-term and wider-ranging benefits. There are also a number of important internal and external policy drivers for adopting sustainable development practices.

DIRECT BENEFITS

2.2 This document aims to show that by adopting a sustainable development approach to all aspects of estate management it is possible to:

- provide a higher quality service;
- save money on estate management; and
- help anticipate and accommodate changing healthcare needs and methods of service delivery by designing for flexible use, and taking an integrated approach to estate planning and design.

INDIRECT BENEFITS

2.3 Although the direct financial benefits of sustainable estate management are more immediately apparent, the links between environmental and social issues and health are now well established (see box below). As a result the indirect benefits to the NHS from supporting the health of the population through the environment and society can be significant. While this guide shows how the practice of sustainable development can save a great deal of money in both the long and short term, it is important to realise that sustainable estate management goes beyond process efficiencies, to include social and environmental initiatives where the financial payback is less direct (although not less real).

In securing better health, we reject the old arguments of the past. We believe that:

- the social, economic and environmental factors tending towards poor health are potent; and
- people can make individual decisions about their own and their family's health which can make a difference.

'Our Healthier Nation', executive summary. DoH, 1998

POLICY DRIVERS

2.4 Sustainable development concepts can be found in almost all new policy. This chapter looks at current Government initiatives and NHS policy that are relevant to sustainability in the NHS.

Government-wide policies

Greening Government

2.5 The Greening Government Initiative, to which all Government departments are committed, has the aim of ensuring that environmental (and more recently sustainable development) considerations are taken into account in all decisions relating to the policies and operations of Government departments. A Green Minister has been appointed in each of the main Government departments to ensure that each department meets its obligations. Principal commitments assigned under the Greening Government initiative are to:

- promote sustainable development;
- integrate environmental issues into policy;
- encourage the use of environmental management systems (EMSs) in departmental and agency estates (with each department to have at least one EMS-accredited site);
- report on environmental issues;
- develop strategies for greening operations, addressing in particular:
 - energy efficiency and greenhouse gas emissions;
 - transport;
 - water conservation;
 - waste minimisation and management; and
 - procurement.

Sustainable development strategy

2.6 In May 1999 the Government relaunched its strategy for sustainable development ('A Better Quality of Life',

DETR), providing a clear indication of the importance of sustainable development in current Government policy.

2.7 To support this strategy the Government has produced a detailed list of sustainable development indicators ('Quality of Life Counts', DETR), which provide policy objectives for each sector of its responsibilities, including health. These include 14 headline indicators, which monitor key factors affecting the quality of life in the UK. The NHS is expected to be able to show that it is aware of its responsibilities for contributing to the achievement of these objectives.

Climate change obligations

2.8 Under the terms of the Kyoto Protocol the UK must meet legally enforceable obligations on the reduction of greenhouse gas emissions. The UK's obligation is to reduce emissions to 12.5% below the levels emitted in 1990 by 2008–2012; however, the Government has set its own target of a 20% reduction by 2010. In order to achieve this the Government launched its Climate Change Programme (DETR) in November 2000. The programme provides a number of means by which the UK can reduce its emissions; of direct relevance to the NHS is the need for each trust to meet individual energy efficiency targets for hospitals by 2010.

2.9 For the NHS the agreed target is to reduce the level of primary energy consumption by 15% or 0.15 million tonnes of carbon from March 2000 to March 2010; and to achieve a target of 35 to 55 GJ per 100 m³ energy efficiency performance for the healthcare estate for all new capital developments and major refurbishments, and that all existing facilities should achieve 55 to 65 GJ per 100 m³.

2.10 Hospitals must also develop travel plans to reduce the impacts of staff and visitors accessing their sites.

Regulatory requirements

2.11 Many of the activities taking place on NHS estates are such that they may have significant environmental impacts and are therefore regulated by the Environment Agency. Large-scale processes such as clinical waste incineration are regulated under Integrated Pollution Control which requires demonstration that any new technologies proposed represent the best available technology not entailing excessive cost.

2.12 The Environment Agency also has responsibilities for checking that an NHS facility is fulfilling its "duty of care" responsibilities under the Environmental Protection Act 1990 by ensuring that any wastes generated are disposed of by certified contractors. Other areas where regulations require that environmental impacts are considered are:

- use and control of dangerous substances (for example radioactive or cytotoxic substances);
- use of contaminated land; and
- air, noise or water pollution.

2.13 Infringements of environmental regulations may be treated as a criminal offence, so it is important that estate managers are aware of their responsibilities in these areas. One of the key components of an EMS is to compile a register of relevant legislation. This activity can help estate managers to be aware of their responsibilities and to better manage site risks.

2.14 A list of some important pieces of environmental legislation relevant to the activities of the NHS is presented in [Appendix B](#). Further information on these regulatory requirements can also be obtained from the DETR website (<http://www.environment.detr.gov.uk/greening/register/index.htm>).

Health service-specific policies

The Health White Papers

2.15 The two White Papers, 'Saving Lives: Our Healthier Nation' and 'The New NHS: modern, dependable', provide a route map for the future development of healthcare in the UK. They both stress the importance of efficient practices, Health Improvement Programmes and Primary Care level treatment.

2.16 Without explicitly addressing sustainable development, 'The New NHS: modern, dependable' discusses many sustainability topics, such as social fairness, efficient use of resources, and focusing on local issues and care. It tasks health authorities, NHS trusts and primary care groups with a number of responsibilities, to which many of the sustainability topics addressed in this document are directly relevant.

2.17 The policies set out in 'Saving Lives: Our Healthier Nation' place a requirement on health service providers to consider not only the efficiency and quality of their service but also the impacts of their activities, how they relate to their community and other local initiatives. This recognises the importance of socio-economic and environmental factors in influencing community health (see [box on page 9](#)).

2.18 An important mechanism for achieving these improvements is the development of partnerships with the community and other service providers, in particular working with Local Government on Local Agenda 21 or Health Action Zone initiatives. Local Agenda 21 is an initiative aimed at ensuring that sustainable development is considered at a local level (see <http://www.la21-uk.org.uk>). Each local authority in the UK should have developed a Local Agenda 21 strategy which provides

an approach to how sustainability issues can be addressed in the area. The NHS can contribute significantly to the achievement of these objectives and can gather much valuable information from co-ordination with those considering sustainability at the Local Government level. Local Agenda 21 is discussed in more detail at [paragraph 9.17](#) together with advice on other local and regional organisations with which NHS trusts could effectively co-ordinate their activities.

The NHS Plan

2.19 Many aspects of the NHS Plan represent a new approach for delivering healthcare in the 21st century, while others centre on improving and refocusing existing priorities. Key aspects of the plan are:

- a major increase in health service funding resulting in over 100 new hospitals, 500 new one-stop primary care centres and modernisation of over 3000 GP premises;
- reform of staff contracts and working roles;
- an obligation placed on NHS employers to create a healthy, comfortable working environment for their staff;
- greater patient empowerment in NHS activities, and more patient-focused practices; and
- targets for removing inequalities in healthcare provision in all areas.

2.20 The NHS Plan will involve significant investment in new estate and review of existing estate and its management. This represents a major opportunity for inclusion of sustainable development ideas to help make the most of this investment of time and resources. Sustainable building design can also help the NHS meet its objectives of providing a healthy and comfortable working environment (see [Chapter 6](#) for further information).

NHS ProCure 21 and Sold on Health

2.21 NHS ProCure 21 and Sold on Health are two new initiatives aimed at making the best and most cost effective use of NHS estate.

2.22 NHS ProCure 21 is a new method by which the NHS will carry out capital procurement. The aims of NHS ProCure 21 are to:

- develop a partnering programme, using long-term framework agreements with the private sector, thereby improving value for money (vfm) and patient service;
- enable the NHS to be a best client;

- promote the use of high quality designs; and
- ensure performance improvements through benchmarking and performance management.

2.23 Sustainable estate planning and management can contribute significantly to these aims, in particular by helping to increase vfm, patient service and use of high quality designs. A core component of NHS ProCure 21 is the use of whole-life approaches to building design and construction; this guide demonstrates a number of examples where whole-life approaches have been used in hospitals and other buildings of different sizes. A second component is the management of the supply chain to improve quality, predictability and vfm; again, this guide shows some examples of how to work with the supply chain to improve the environmental performance of buildings whilst also saving significant capital expenditure. Further information on NHS ProCure 21 can be obtained from NHS Estates at <http://www.nhs-procure21.gov.uk>.

2.24 Sold on Health considers how the NHS estate portfolio can best be managed to ensure that managed estate is able to perform to a high standard and to dispose of surplus estate in the right manner. Consideration of sustainable development is an important component of such an exercise because sustainability issues relating to location and efficiency of building design will be important factors in considering whether or not to dispose of specific estate. [Chapter 11](#) provides further information on sustainable development indicators that could be used to help assess estate management options. Further information on Sold on Health can be obtained from <http://www.soldonhealth.gov.uk>.

Controls assurance

2.25 Controls assurance is, primarily, a form of self-assessment for standards of corporate governance covering clinical, financial and organisational issues. It requires NHS trusts to move beyond reporting on internal financial controls and to address wider risk management and organisational topics. Trusts must provide evidence that they are doing their 'reasonable best' to manage themselves so as to meet their objectives and protect patients, staff, the public and stakeholders against risks of all kinds. There are 17 organisational controls assurance standards which sit within an overarching risk management framework. Several of these standards involve consideration of sustainable development and environment issues, such as:

- environmental management;
- waste management; and
- transport.

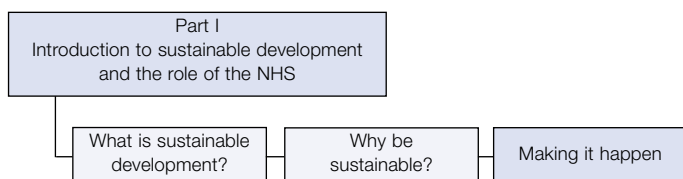
2.26 NHS trust chief executives are now required to sign a statement of assurance that the above areas are being managed effectively. These statements will appear in trust annual reports. [Part II](#) of this guide considers each of the above topics and provides advice on how sustainable development practices can bring most benefit from attaining controls assurance standards.

2.27 Further information on controls assurance standards can be found on the NHS Estates website http://www.nhsestates.gov.uk/property/control_assurance.html

LOTTIE HOBSON AND ISABEL HEYWOOD CENTRE (RESIDENTIAL WING), SALFORD: PHOTOGRAPH COURTESY THE CENTRE FOR ACCESSIBLE ENVIRONMENTS



3 Making it happen



3.1 This chapter provides some advice on how to improve the sustainability of the planning, design and management of NHS estates. It focuses on processes for implementing sustainable development, considers ways in which barriers to sustainability can be overcome and how performance can be assessed. Key aspects of incorporating sustainable development into estate management activities are:

- identifying key sustainability objectives for the facility based on relevant local, regional and national sustainability objectives;
- considering how the facility can maximise its performance against each objective (perhaps using performance indicators such as those suggested in [Chapter 11](#)); and
- developing a management system for ensuring that sustainable development aspects are controlled throughout the life-cycle of the estate.

3.2 Further information on actions that can be taken throughout the estate life-cycle is presented in [Part II](#) of this guide, while [Part III](#) contains useful resources to help in their implementation.

APPROACHING SUSTAINABLE DEVELOPMENT

3.3 Sustainable development cannot be brought into the NHS without committed and enthusiastic leadership by senior clinical and management staff. Within each health authority, trust or primary care group a sustainability champion is needed to inspire and enthuse, and to ensure ideas are discussed and implemented where merited.

3.4 Often the most difficult aspect of becoming a more sustainable organisation is making the initial commitment to the process. Sustainable development requires looking anew at everyday activities and asking “how could this be done better?” This is not always easy and the need and reasons for change have to be understood and embraced by staff at all levels.

Sustainability appraisal

3.5 Sustainability appraisal is a process by which important sustainability-related objectives for a new project or strategy are devised and then used to identify

areas where sustainable development must be considered. As this process provides an overview of the sustainability of a proposal, it enables key issues to be identified and addressed at an early stage.

3.6 A simple approach for conducting sustainability appraisal is to develop a list of sustainability objectives by reference to current Government and regional strategies (for example the national sustainable development strategy ‘A Better Quality of Life’, and the regional sustainability frameworks being produced by regional assemblies). By considering the extent to which different aspects of a proposal contribute to, or detract from, these objectives it will be possible to identify areas where the sustainability of the proposal could be improved.

3.7 A more advanced approach to appraisal would involve developing a list of sustainability objectives with a wider stakeholder group (such as other service providers, non-governmental organisations, and patients’ groups). This could help to focus the selected objectives more closely on site-specific criteria.

Environmental management systems

3.8 In simple terms an environmental management system (EMS) can be described as a formal mechanism by which an organisation can:

- a. identify and manage its environmental impacts;
- b. formulate and implement environmental policy commitments; and
- c. facilitate and demonstrate continual improvement of environmental performance.

3.9 Physically, an EMS is a set of policies, plans, procedures and records, which address the environmental aspects of an organisation’s activities. Some of these documents may already exist within an organisation and some of them may need to be created in order to meet the particular requirements of an EMS standard.

3.10 Management systems are a good method of ensuring that environmental and other considerations are taken into account during specific activities or projects. These systems can be adopted at a range of

levels of complexity to suit the available resources and needs of the organisation. A GP practice or health centre might want to take a relatively basic approach, while NHS trusts will be required to address environmental management as part of the Controls Assurance system. The Environmental Management Controls Assurance standard covers many of the same elements as the international standard for EMS ISO 14001.

3.11 Although management systems are most commonly associated with control of operational activities, the development of organisational policies on sustainable development can be useful in setting a framework for considering these issues during other stages of the estate life-cycle.

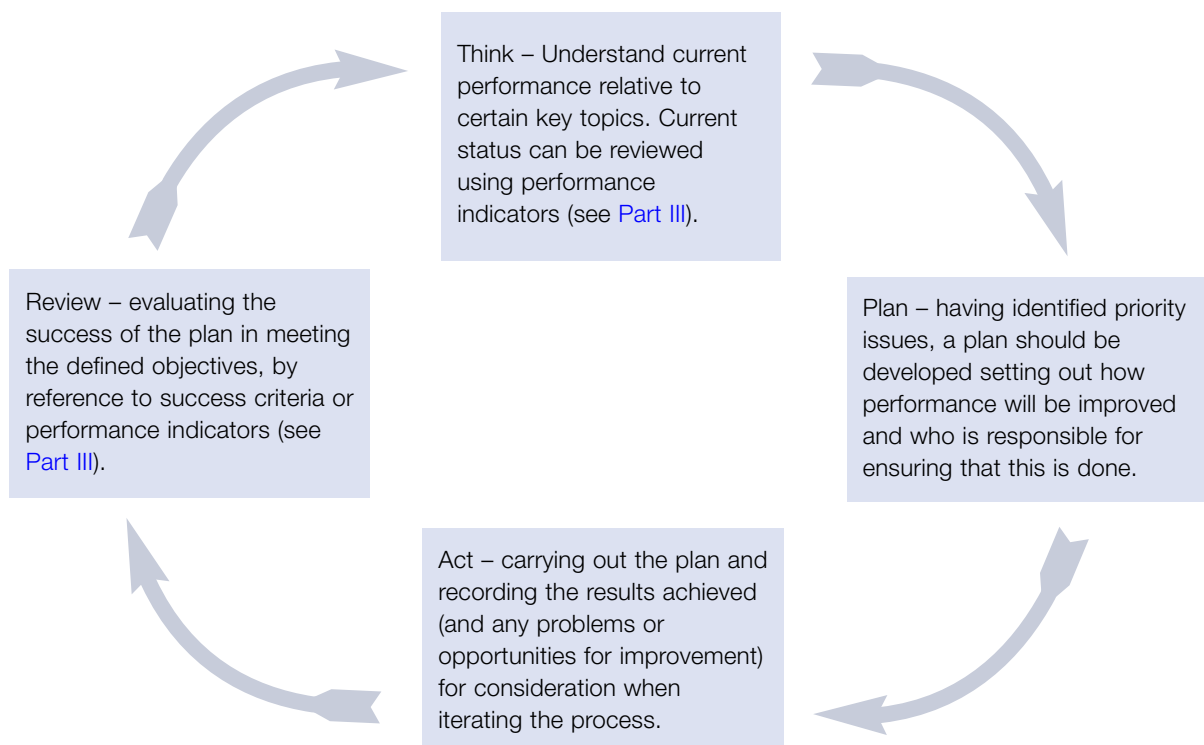
3.12 A simple method of beginning to look at sustainable development issues within a small facility is to adopt an iterative ‘think, plan, act, review’ approach as shown in Figure 2. This enables important issues to be identified and addressed.

The benefits of using an EMS

3.13 The results of surveys of organisations (both public and private sector) which have worked towards ISO 14001 show that there are a number of advantages to implementing a formally certified EMS:

- compliance with legislative requirements. A formal system shows that there is awareness of the legal commitments affecting the organisation and that these are being managed;
- a systematic process for risk identification, reduction and management. To bring about improvements in environmental performance;
- reduced costs. In many instances, a formal EMS can assist in the reduction of operating costs, through, for example, the more efficient use of energy and resources, or reduced waste, as demonstrated by the case studies later in this chapter. Operational efficiencies can be improved through targeted environmental initiatives;
- assurance for “corporate” functions. By requiring an independently assessed formal EMS, corporate functions (such as the NHS Executive) can gain assurance that the systems are being fully tested and are appropriately focused on significant environmental risks and liabilities as well as cost-saving opportunities;
- efficient reporting and feedback mechanisms. At all levels of care, there are NHS-imposed requirements for providing feedback on progress against a whole range of policy objectives and commitments, such as those under Controls Assurance. An EMS can be used to enhance and rationalise systems for data collation and reporting;
- public recognition. An externally certified system can be used for marketing or promotional purposes.

Figure 2 A basic approach to implementing sustainability



Possession of a formally certified EMS can also increase confidence across customer base, lenders, and the local community where the site is based. This confidence is greatly increased if progress against agreed objectives and targets for improved performance can be demonstrated and is published.

EMS standards

3.14 There are two formal standards used in the UK to ensure effectiveness of an EMS:

- a. the international standard for EMSs, ISO 14001 (and supporting guidance 14004); and
- b. the European Commission Eco-Management and Auditing Scheme (EMAS).

3.15 This guidance concentrates on the EMS framework in the ISO 14001 standard because:

- a. many NHS trusts are now implementing ISO 14001 EMSs to good effect (see case studies of Kent and Canterbury Hospital (paragraphs 3.38 ff) and Down Lisburn Health and Social Services (HSS) Trust (paragraphs 3.42 ff, 7.129 ff, 8.48 ff));
- b. it is less onerous than EMAS, and once an ISO system is developed the additional steps to gain EMAS registration can be taken in the future, when necessary; and
- c. the Greening Government drive across Government departments, agencies and non-departmental public bodies is to implement ISO 14001-compliant systems. This includes the NHS.

3.16 An EMS standard can be used simply as a guide to the elements of good environmental management, or can be applied rigorously by an organisation seeking formal certification. Formal certification of an EMS is carried out by an accredited third party (a certification body).

Steps in implementing an EMS

3.17 Implementing an EMS can be summarised in four steps:

- step 1 – setting the “baseline”;
- step 2 – setting objectives and targets for improvement;
- step 3 – implementation and operation of the EMS; and
- step 4 – check on progress and performance.

3.18 These steps are based around the implementation of an ISO 14001-style EMS, but are also appropriate for

less formal systems that are more suitable for smaller intermediate and primary care facilities.

3.19 There are a number of commercially available software packages for assisting with the development and implementation of an EMS. Most offer help in the form of guidance, sample procedures and document templates.

Step 1 – setting the “baseline”

3.20 Whether or not a formal EMS is to be implemented, the first step that any organisation, large or small, simple or complex, should take is to carry out an Initial Environmental Review. This would aim to establish a “baseline” with respect to environmental management practices (that is, “where are we now?”). The Initial Review aims to identify:

- a. the significant environmental aspects of activities within the organisation, and the additional controls or investments needed to minimise these impacts; and
- b. the environmental legislation that applies to the organisation, and the status of compliance of current activities (and any necessary actions to comply).

3.21 Issues that could be considered in the baseline review would be waste generation and management, energy use, transportation etc. Examples of proformas for compiling a register of environmental aspects and implications of legislation are presented in Chapter 12 of this guidance.

Step 2 – setting objectives and targets for improvement

3.22 Using the findings of the Initial Environmental Review:

- a. establish a strategy, with objectives and targets, and a programme for addressing significant environmental impacts, preventing pollution and complying with environmental legislation;
- b. make a summary of this intention available to staff and the public in the form of an environmental policy. Chapter 12 shows a model environmental policy developed by the DETR for use by Government departments (see also DETR’s website at <http://www.environment.detr.gov.uk/greening/policy/index.htm>). This policy can be adapted as necessary to make it applicable to site-specific requirements.

3.23 Prioritise actions (based on how significant they are and the associated time and costs) to allow a more achievable, phased approach to addressing them. An example of a prioritisation system that could be applied is shown in Table 3.

TABLE 3 PRIORITISING ENVIRONMENTAL ACTIONS

Priority	Action category
1	“Must do” – the activity causing an environmental impact represents a non-compliance with a legal requirement and/or poses a significant risk to the environment, with associated reputational risks if a pollution incident occurs. Therefore, prompt action is needed.
2	“Easy win” – the activity causing an impact requires minimal time and investment to address, in order to minimise the impact.
3	“Nice to have” – more time, effort and capital investment are required (over a longer time scale) in order to minimise the impact, in line with best operational practice.

3.24 Allocate responsibilities, time scales and resources to actions, in order to implement the strategy and programme, and monitor progress regularly.

Step 3 – implementation and operation of the EMS

3.25 Two vital elements of an effective EMS are training and communication, so that staff are aware of their roles, the implications of their actions and the tools available to help them. Communication techniques include use of intranet pages, in-house staff newsletters, poster campaigns and any existing team briefing mechanisms. Staff should be involved in the design and implementation of an EMS in their work areas and facilitated workshops. Discussing effective ways of improving environmental performance can help to bring a sense of local ownership and raise awareness of the EMS.

3.26 All staff whose activities are covered by an EMS should be aware of:

- the EMS – what is it for and how does it work?;
- the significant impacts of the organisation and their roles in minimising them; and
- the objectives and targets set within the environmental strategy and programme and their roles in achieving them.

3.27 More specific training for key staff whose roles directly impact on the environment would cover the following:

- use of written environmental control procedures, for example in waste management; and
- internal auditing of the EMS.

3.28 If a formally certified EMS is the ultimate aim, the certification body will test staff awareness and training.

Step 4 – check on progress and performance

3.29 The following steps should be followed to monitor the effectiveness of an EMS:

- auditing progress periodically against the strategy and programme (considering how effectively it is being implemented and the performance improvements being achieved);
- reviewing, at senior management level, the effectiveness of the system(s) in place for achieving improvement in performance; and
- making changes to work practices and the EMS documentation as necessary.

3.30 Performance indicators discussed in [Chapter 11](#) can be used to help monitor performance against environmental and other sustainable development objectives.

Approaches for facilities of different sizes

3.31 The cost-effectiveness of adopting different levels of EMS will vary according to the size and complexity of the NHS facility involved. NHS trusts should all be implementing an EMS that meets the requirements of Controls Assurance and ISO 14001. Smaller intermediate and larger primary care centres may choose to adopt a less formal system based on the steps outlined previously. For smaller facilities the emphasis may be best placed on identifying relatively straightforward activities that can improve their environmental performance using the basic approach outlined in [Figure 2](#). Initiatives could include:

- reducing waste disposal costs by recycling materials such as paper, cans and toner cartridges in association with local recycling organisations or charities; and reducing paper use through re-use of scrap paper and more use of electronic systems, such as for records management;
- considering buying ‘greener’ goods and services, such as paper; and
- encouraging staff and visitors to travel by public transport or bicycle by promoting the health benefits.

3.32 Further information on these and other actions is included in [Part II](#) of this guidance.

3.33 All facilities should ensure they have a good understanding of the legal requirements that apply to their activities, to avoid environmental or human health impacts, action by the local regulatory authorities, potential fines and bad publicity. Important activities for many organisations will include waste management and disposal, operation of incinerators and boilers, where

appropriate, and safe containment of dangerous substances.

Resources required for implementation and beyond

3.34 For the more formal EMS, relevant staff will be needed during the Initial Review to aid the data gathering exercise (including documentation retrieval). Most effort is required during the development and implementation stages of an environmental policy and EMS, and the effort will depend on the size and budget of a particular facility. The biggest resource implication will relate to raising environmental awareness and environmental training of staff in support of the EMS implementation process.

3.35 Once the EMS is implemented the resource requirements are less onerous; staff will be needed for maintaining (estimated at a few days per month), auditing (ideally two/three days every six months) and reviewing (by senior management at least annually) the system and the progress against objectives and targets.

The development of sustainability management systems

3.36 Under their Sustainable Technologies Initiative, the DTI are currently supporting the development of sustainability management tools, systems and standards through the Sustainability: Integrated Guidelines for Management (SIGMA) project. This work is being conducted by the British Standards Institute, and the NGOs (non-governmental organisations) Forum for the Future and the Institute for Social and Ethical Accountability. A number of companies are taking part in order to pilot the new tools and systems when developed. More information can be found at <http://www.projectsigma.com>.

3.37 A Sustainability Management System will be much broader than ISO 14001 and will aim to encompass

economic and social issues related to an organisation's internal equality and labour standards and its relationships with the community.

CASE STUDIES

Kent and Canterbury Hospital, East Kent NHS Trust

3.38 Since implementing an EMS at the hospital, there have been improvements in environmental performance (and associated cost savings). These include:

- reduced waste disposal costs (see Table 4); and
- reduced energy costs (see Table 5).

3.39 'Greencode' software was used to set up the EMS and is now used as an audit tool to support the EMS by identifying necessary updates.

3.40 The benefit of the EMS, as well as making the savings listed above, is that it enables the Controls Assurance Environmental Management standard to be met on an ongoing basis.

3.41 Now that three trusts have been merged into one, the environmental and other policies are being rewritten so that they accurately reflect all new areas.

For more information on sustainability at Kent and Canterbury Hospital, contact the Non-Clinical Risk Manager, East Kent Hospitals NHS Trust, on 01227 766877.

TABLE 4 REDUCED WASTE ARISING ACHIEVED THROUGH IMPLEMENTATION OF EMS (TONNES PER YEAR)

Waste	1997	1998	Change (%)
Black bag (general household waste)	302	292	-3.3
Yellow bag (clinical waste)	227	220	-3.1
Green bag (paper recycling)	19	26	+37.0

TABLE 5 REDUCED RESOURCE USE ACHIEVED THROUGH IMPLEMENTATION OF EMS

Resource	1998/99	1999/00	Change (%)
Electricity	477601(Gj)	467869(Gj)	-2.0
Gas	13594359(kWh)	13415025(kWh)	-1.3
Fossil fuels	49391(Gj)	48579(Gj)	-1.6

Down Lisburn HSS Trust

3.42 Down Lisburn Trust gained certification to the ISO 14001 EMS standard in 1998 for its Lagan Valley Hospital site using Greencode. In 2000 the Trust gained ISO 14001 certification for another nine facilities, including elderly people's homes and three disability service units. In addition, it is aiming for corporate certification for the 58 facilities for which it has responsibility. Because it has ISO 9000-quality systems (and is aiming for the European Total Quality standard) it is integrating the EMS requirements with these and amending existing operational procedures accordingly.

3.43 The main benefits of the EMS and the environmental initiatives carried out to date have been:

- precautions taken against environmental incidents and associated fines (avoiding cost and bad publicity);
- the recent installation of a combined heat and power (CHP) plant at the Lagan Valley Hospital site, which has just been connected to the natural gas network. The project was supported by a Central Government energy efficiency fund and is the first CHP plant in the Northern Ireland health service;
- recognition received from the local councils and press (PR benefits);
- increased awareness among Trust staff and also in the community (via patients and visitors) of environmental issues. There are plans to roll out their internal environmental awareness programmes to interested patients at various facilities; and
- performance improved continuously by the ongoing audit programme.

3.44 The Trust is also actively liaising with its local community (and has sent out questionnaires) to solicit views and ideas on what it is doing, environmentally and otherwise.

For more information on sustainability at the Lagan Valley site, contact the Environmental Officer on 028 9250 1234.

OVERCOMING BARRIERS TO SUSTAINABLE DEVELOPMENT

3.45 The main barriers to sustainable development in the NHS are the perceived additional costs involved and the complex operational requirements of a healthcare facility.

Economic barriers

3.46 Incorporating sustainable development ideas into estate planning and management need not cost more

than using traditional techniques. In most cases a more sustainable option is far cheaper in the long term – and in many instances is also cheaper initially. For example:

- the use of CHP at Diana Princess of Wales Hospital, Grimsby, saves approximately £110,000 each year in energy costs. The additional capital expenditure was met with financial assistance from the Government with a payback period of four years. Where CHP is installed into a new facility the financial benefits are likely to be even more apparent; and
- the use of whole-life costing in the design of the heating system in the new Princess Margaret Hospital in Swindon resulted in a saving of £6000 in capital expenditure and an estimated £213,000 in operational expenditure, with a significant reduction in greenhouse gas emissions.

3.47 The Government is attempting to further break down the economic barriers to sustainable development by introducing a range of environmental taxes. The aim of these taxes is to ensure that prices reflect more of the real costs of resource use and pollution, and they are now a central component of Treasury policies. For example, the climate change levy (a charge on energy used in business, commercial and the public sectors) comes into force in April 2001 and will act as a driver for increased energy efficiency (for further information, see 'The UK Climate Change Programme', DETR, available for viewing at <http://www.environment.detr.gov.uk/greening/policy/index.htm>). Other economic instruments, such as the landfill tax, are already in place and have dramatically increased the costs of waste disposal, making it much more important to minimise waste arisings (especially clinical waste). The landfill tax escalator (progressively increasing the level of landfill tax each year) will serve as a continuing driver for reducing waste generation. Further information on the landfill tax can be found in the 'Waste Strategy 2000 for England and Wales: Parts 1 and 2', DETR.

3.48 The NHS will increasingly have to pay more of the real social and environmental costs of its energy and resource use. As a result the economic barriers to implementing sustainable development approaches may well be reversed and become drivers for their adoption.

Operational barriers

3.49 Management systems and technologies are only as effective as their operators allow them to be. It is important when new procedures or technologies are introduced that those affected are given sufficient training to operate them in the correct manner. If they are not used as intended, not only can they fail to deliver their potential savings, but they might even be much less efficient than a traditional technology used correctly.

3.50 Regular servicing and maintenance of complex equipment can help to improve operational performance, and such work is often undertaken by specialised external contractors. Even if this is the case, it is still essential that staff awareness and training activities stress the need for good housekeeping measures, in relation to such equipment.

Special requirements of the NHS

3.51 The requirements of NHS facilities are different and not all the available techniques for minimising pollution or waste will be appropriate. The preservation of a hygienic and comfortable environment for patients and staff, and the need for procedures that maximise the effectiveness and safety of healthcare should always take priority. For example, the clinical need for disposable syringes may outweigh their waste and resource costs. However, their efficient use can be maximised through effective and safe waste segregation procedures.

3.52 As a further example, certain areas in hospitals need very high levels of air ventilation, which could not effectively be achieved by natural sources. As a result most hospitals will still need significant mechanical ventilation systems for some parts of the site. However, if the site layout is designed in order to group areas of similar service requirements then the impacts of this on other areas can be reduced. Fire regulations for hospitals reduce the use that can be made of passive ventilation techniques,¹ but it is possible to use passive ventilation in some areas, and the use of shallow plan designs can allow the use of natural ventilation.

MEASURING PROGRESS

3.53 The Government has produced a detailed list of sustainable development indicators ('Quality of life counts', DETR), which provide policy objectives for each sector of its responsibilities. These include 14 headline indicators, which monitor key factors affecting the quality of life in the UK.

3.54 Indicators help to determine whether existing initiatives are achieving their goal or whether additional efforts are necessary. Their use also helps to break down sustainable development into understandable "bits", relating the concepts to measurable activities. The NHS will be expected to make its contribution to improving performance against these indicators.

3.55 Sustainable development indicators complement the other key performance indicators already in use in the NHS – for example those used to review estate performance for developing estate strategies. Part III contains further information on Government and sectoral indicator initiatives and proposes a draft list of sustainability indicators for the NHS based on national and sectoral objectives.

3.56 In developing sustainable development indicators it is necessary to be aware of the links between issues so that their messages can be interpreted correctly. Acknowledging the interactions between the different sustainability indicators also helps to reinforce the need to consider a number of factors before determining the best option.

¹ Air breaks are required to slow the spread of fire and give an opportunity to evacuate bed-bound or disabled patients.



Part II Practical guidance

This part of the document provides brief practical guidance on the application of sustainable development concepts throughout the implementation of NHS estate strategies. The structure of the guidance is based around the different stages in the estate life-cycle (shown in Figure 3). It considers:

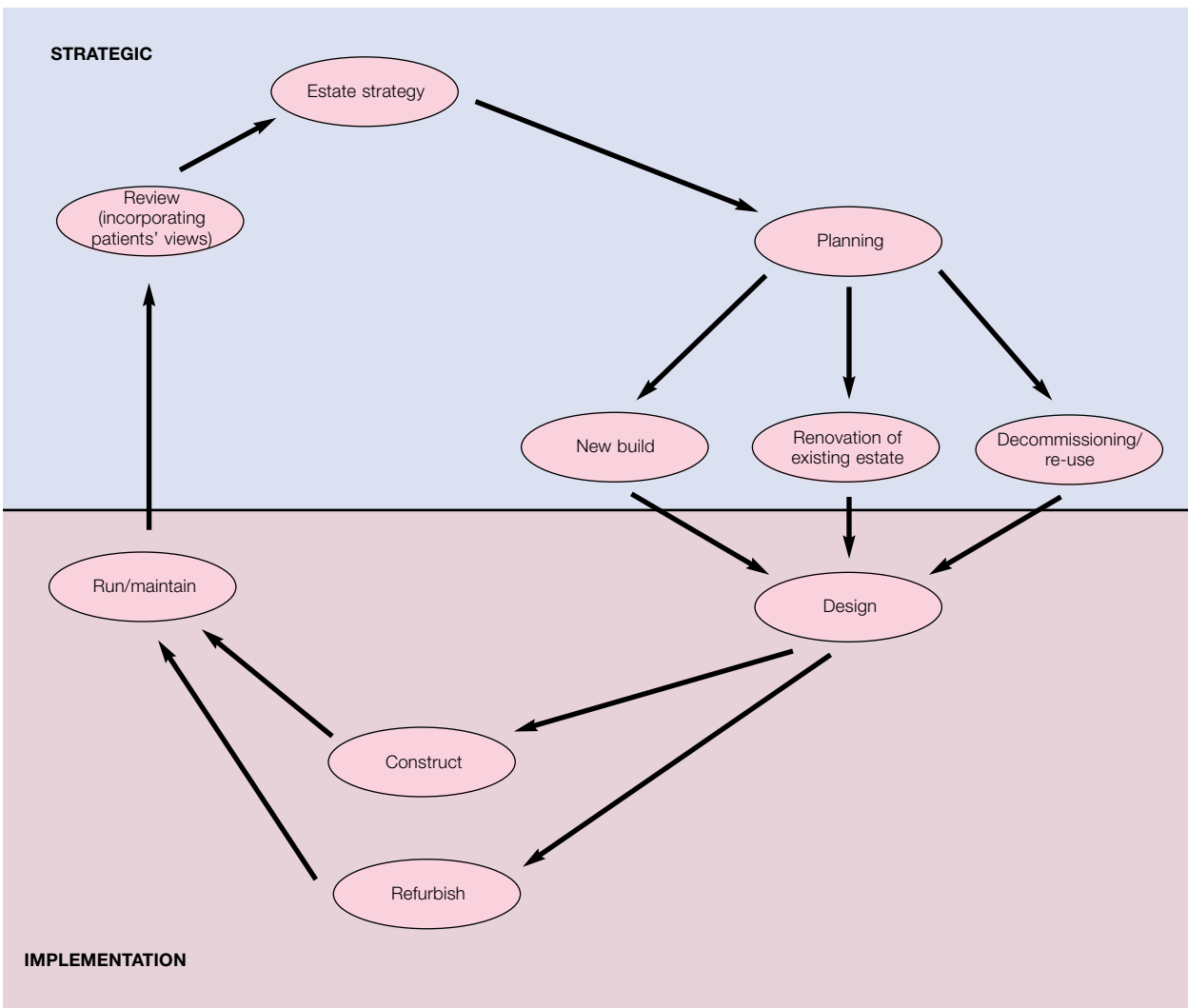
- sustainable development considerations in NHS estate strategies;
- planning;
- design and construction;
- operational activities;
- energy and water efficiency;
- waste management and minimisation;
- transport;
- purchasing and supply; and
- participation.

For more detailed information on the overall development of estate strategies see ‘Developing an Estate Strategy: modernising the NHS’ and ‘Capital Investment Strategy for the Department of Health’.

The information presented in this part of the guide is purely to give an idea of the range of actions that can be taken to address sustainability in NHS facilities. EMS- or sustainability appraisal-based approaches to identifying issues such as those proposed in Chapter 3 (from paragraph 3.5) can be used to identify important sustainability issues and opportunities for incorporating different aspects of the guidance.

Tables 7 to 12 in Chapter 10 provide summary checklists for each topic area.

Figure 3 The life-cycle of an estate strategy



4 Sustainable development considerations for NHS estate strategies



4.1 In formulating the estate strategy, the following key issues will need to be taken into account in considering future development options:

- the need for the facility and its content;
- the location of the facility;
- links with other services; and
- quality of service.

4.2 These issues are interlinked and will apply whether the facility is a GP surgery or an acute hospital. Sustainable development is only one factor to be considered when developing an estate strategy (others include clinical outcome, attendance rates and cost). However, a sustainable approach can help to improve the quality of an estate strategy, particularly when considering the location of the facility, links with other services, design quality and site audit.

4.3 For more detailed information on the overall development of estate strategies see 'Developing an Estate Strategy: modernising the NHS' and 'Capital Investment Strategy for the Department of Health'.

Need for the facility and its content

4.4 The need for a health service facility and its content will be driven by patients' needs and views and clinical requirements. However, there are opportunities to enhance the sustainability through consideration of how services can be provided most efficiently. The use of information technologies to link services and to provide information remotely can be an important component of ensuring that most effective use is made of resources. Also investigating the extent to which other services can be provided from the same site can reveal significant benefits through economies of scale (for smaller facilities), increasing the viability of transport access and through effective integration of services.

Location of the facility

4.5 The location of the facility should respond to sustainable development themes by:

- using previously developed land, if possible; and
- being in the most accessible position for its catchment area. At a local level, this should aim to be in the most densely populated locations (to reduce the need to travel by private car where possible) with good access by public transport.

4.6 Access to information, advice and treatment in a timely and appropriate manner has a direct impact on quality of care and is essential to providing an effective health service. Access to healthcare can mean a visit to the doctor or a hospital, but may also mean access to information which might provide sufficient assurance or advice to remove the need for a physical visit to a surgery (for example through NHS Direct). Access can also mean visits at home by a doctor or nurse. A travelling practice, providing health advice on a regular basis in both rural and urban areas, can be a good way of serving those in without access to transportation, for example, or the homeless. In developing an estate strategy it is important to be aware of the role of non-location-based access to healthcare in providing a sustainable service within an area.

4.7 In considering location of a facility it is also important to be aware of how changes in service planning, healthcare policy or demographic shifts may alter the access needs placed on the facility (further information on flexibility in facility design is covered in [Chapter 6](#)).

4.8 Although local service provision is a general objective, in some cases other criteria can be more important in determining the location of facilities. For example, where a higher quality service can be provided from centralised facilities this may mean that patients have to travel further for treatment. Patients' views should, of course, also be considered when assessing the viability of different sites. In many cases patients will highly value the ability to reach hospitals (especially accident and emergency services) by car and this may necessitate their location in areas that are widely accessible by car within the facility's catchment area. In instances where there is a conflict between location objectives, a sustainability appraisal (see [paragraph 3.5](#))

could be used to compare the benefits and costs of potential locations.

4.9 Wherever a facility is located, working with local and regional transport service providers to enhance the accessibility of the site can help to maximise the use of public transport when feasible. This requirement is reflected in the Government's Planning Policy Guidance Note No. 13: 'Transport' (DETR), which states:

"Facilities with wide catchment areas attracting large numbers of people should be located so that they are well served by public transport and as accessible as possible for those who need to use them. Such facilities include higher and further education establishments, conference centres, hospitals, main libraries and principal offices of local authorities."

Links with other services

4.10 Health services are only one of many public and private service providers which operate in the community. By working effectively with other organisations the NHS can ensure that it contributes fully to the development of a healthy and sustainable community.

4.11 Opportunities presented by the co-location of health services with those provided by other agencies and bodies could include:

- the re-housing of present disparate services in one location;
- cost efficiencies and sustainability benefits of funding a single building rather than many;
- amalgamation of capital spend yielding cost benefits and allowing disposal of redundant estate;
- the opportunity to create a community focus and attract further investment; and
- provision of integrated services. A greater opportunity for "one stop" service delivery, this should reduce the time taken to procure healthcare, and reduce travel.

4.12 Further information on relationships with other service providers is included in [Chapter 9](#).

4.13 As the lifetime of the building is likely to exceed current clinical practice, an informed view needs to be taken about what flexibility will be required within the proposed building or whether extensions will be required at a later date.

Quality of service

4.14 An audit of the existing estate will allow an assessment of the estate's quality and its potential to meet the current and developing needs of the population in a sustainable way. The estate can be balanced against these needs with each of the following criteria:

- a. its location and relationship to the needs of the community;
- b. its potential to conform to other sustainable development principles: re-use of land, density, linkages etc;
- c. the design of the estate and the potential for renovation to improve service quality or energy efficiency;
- d. its capacity to accommodate the potential range of requirements (if it is likely to be too small, consideration should be given to whether there are opportunities for future expansion); and
- e. other constraining issues, such as environmentally sensitive areas or listed building status.

4.15 The audit of an estate could include those areas owned by other potential stakeholders in the project, for instance, local authorities. The use of whole-life approaches can help to ensure that most effective use is made of the available estate options. When considering the development or renovation of sites it is important to consider all the costs associated with different properties, including capital, operating and efficiency costs (where the building does not allow the efficient deployment of staff or resources). Further information on the use of whole-life approaches in building design is included in [Chapter 6](#) (see especially [paragraphs 6.26 ff](#)).

5 Planning



INTRODUCTION

5.1 This chapter identifies the main sustainability themes now being embodied through the statutory development plan process and identifies their impact on town development. The implications of these are then discussed in relation to the land-use options for the estate, namely, new build, adaptation of existing estate or decommission/re-use.

5.2 The key issues that require consideration in the estate planning are outlined and advice is given on the use of consultation to enable the involvement of the community in the planning process.

LEGISLATIVE PROVISIONS

5.3 This chapter highlights issues relating to sustainable development and the Town Planning system, and the importance of regulatory compliance in furthering the aims of the NHS estate.

5.4 Most development proposals need planning permission. This is done by way of application to the relevant Local Planning Authority (LPA). On receipt of a planning application the LPA considers whether the development proposed complies with its Development Plan. The Development Plan should reflect the Government's policy on sustainable development as contained in Planning Policy Guidance Notes (PPGs). If it is considered that the application insufficiently addresses sustainability issues, the LPA can ask for further information from the applicant. Failing the receipt of this, they can refuse planning permission.

5.5 Planning policy filters down from Central Government level to LPAs as described below. PPGs produced by the DETR instruct local planning policy. PPGs draw on other Central Government policy papers, and in particular 'Sustainable development: the UK strategy' (Department of the Environment, 1994). 'Planning for sustainable development: towards better practice' (Department of the Environment, 1998) also gives direct advice to local authorities on how to build sustainable development into their Development Plans and planning application decisions. It is likely that any future revision of PPGs will consider the new UK strategy for sustainable development as described in [Chapter 1](#).

MAIN LAND USE PRINCIPLES

5.6 The planning process acts as a regulatory mechanism for many sustainability themes, covering the interests of a wide range of concerns. Its prime function is to regulate the use of land. The following land use policy principles respond to sustainable development themes:

- re-use of land and buildings;
- increasing urban density;
- development nodes and corridors; and
- mixed-use development.

5.7 These themes and their contribution to sustainability objectives are now considered in turn.

The re-use of land and buildings

5.8 The re-use of sites and the conversion of buildings can contribute to the objectives of sustainability by:

- reducing pressure to develop on previously undeveloped land, particularly the open countryside;
- improving the viability of public and other services in urban areas. This, however, will depend on the right site being chosen;
- raising the average residential density and increasing the population to support those services (see below); and
- assisting in urban regeneration. This will potentially improve the quality and vitality of the urban environment and urban living.

5.9 All levels of plan preparation will seek to assess the potential for the development of previously used sites. Targets for development of such sites have already been set for housing and may be expected for other land uses.

Increased urban density

5.10 Increasing urban density can contribute to the objectives of sustainability by:

- reducing the overall land taken for development and thus minimising the loss of open countryside to development;
- exploiting more fully locations which have high public accessibility;
- increasing the range of local services that can be supported, thereby reducing the need to travel, and hence the use of transport. This in turn will reduce energy use and emissions; and
- providing more passengers for public transport services, thus improving their viability.

5.11 The implication of this is that density standards will be applied through the planning process to increase densities in specific locations or development nodes. These could be determined by current or future accessibility to public transport and will affect the location of facilities and services.

Development nodes and corridors

5.12 Planning policies to extend urban areas at nodes and in corridors can contribute towards sustainable development by:

- effectively exploiting existing or proposed transport infrastructure;
- promoting the location of travel-intensive forms of development (such as hospitals) at sites with high public transport accessibility;
- promoting development of previously used sites that are well located; and
- seeking to provide communities with a range of facilities.

5.13 A key action for Local Planning Authorities will be to devise a strategy for the identification of growth nodes within transport corridors and to identify the potential for concentrating development in these areas. The revised planning guidance, PPG13 on Transport, emphasises the role of travel plans in the delivery of sustainable transport objectives and describes where a planning application may need to be accompanied by a travel plan.

Mixed-use development

5.14 Mixed-used development can contribute towards sustainable development in the following ways:

- making urban areas more attractive places to live;
- improving the vitality and viability of centres by increasing their use at all times of the day and by introducing new residents and visitors;

- reducing the need to travel by providing for a range of needs in close proximity; and
- fostering social inclusion by making it easier and cheaper for people to reach the facilities they need.

DEVELOPMENT PLANS AND THEIR IMPLICATIONS FOR THE NHS ESTATE

5.15 The Local Development Plan (or Unitary Development Plan in unitary authorities) is the prime land use plan for any given area. The ability of landowners to develop or change the use of their property depends to a great extent on the conformity of the proposal with the plan.

5.16 As mentioned above, the Local Plan should reflect the Government's policy on sustainable development. It follows that to successfully promote its estate through the planning process and ensure that the right facility is provided in the right location at the right time the NHS needs to respond positively to the sustainability themes of the planning process.

5.17 The ways in which sustainable development interacts with estate development options are outlined in the rest of this chapter.

New build

5.18 Current National Planning Policy Guidance (Note No. 1 (revised): 'General Policy and Principles', DETR) places a high emphasis on the re-use of land for the reasons discussed previously. Proposals for new-build, greenfield facilities may be expected to demonstrate why no suitable, previously developed, brownfield site was available. From a sustainability perspective, the best practice is to select brownfield, as opposed to greenfield, sites for new developments.

5.19 An assessment of a proposal's catchment area should demonstrate that the chosen location relates well to the needs of its population. Sustainable development suggests that a site in a densely populated development node, well related to other services and accessible by current and planned public transport, is the ideal.

5.20 As the White Paper 'Saving Lives: Our Healthier Nation' emphasises an inclusive and participative approach, the facilities should be responsive to the needs of the population. Consideration should be given to how these needs are expected to change over time and whether the building and land are flexible enough to accommodate these changes.

5.21 Opportunities to fund set up costs through co-location of services should be considered (see case studies: Neptune Health Park (paragraphs 5.33 ff, 9.30 ff) and Lawley Clinic (paragraph 5.38 ff)). There may also be an opportunity to provide the development through a mixed-use approach with other land uses.

Renovation and development of existing estate

5.22 This includes building or facility renovation, the extension of existing buildings, or the demolition and re-provision of facilities, and is normally driven by the existing ownership of the site. Where practical it may be better to make fuller or more efficient use of existing estate because of the potential for cost and resource savings. However, there is a question as to whether the asset is in the best place to meet the community's needs sustainably; an improved facility will only partly achieve its potential if it is not well located (considering accessibility or development density), or if its existing design limits the extent to which cost effective renovation can be carried out. In these cases disposal and relocation could be considered.

5.23 Planning considerations such as a building being in a conservation area or having listed building status may constrain the extent and detail of potential changes.

5.24 By ensuring that new facilities are designed with flexibility of use in mind it should be possible to improve the future viability of estate renovation and thereby reduce the need for new building.

Decommissioning/disposal of existing assets

5.25 For land that is surplus to requirement, or does not relate well to expected need, proposals for alternative uses can be established within the development plan process.

5.26 Some redundant estate, such as former psychiatric institutions, may be on very valuable building land. However, the sustainability benefits of re-using such sites may be nullified by their remote location, which creates unsustainable traffic movements.

5.27 Such sites may be large enough to accommodate mixed-use development in a sustainable way. The success of representations through the relevant Local Plan would depend on the local demand for development and the capacity of existing urban areas to accommodate this demand. If there is still unmet development demand, then a sustainability appraisal of the location against competing sites may be required.

REPRESENTATIONS TO LOCAL PLANS

5.28 The process outlined in [Chapter 4](#) should allow a strategic assessment of the estate against identified need and allow representations to be made to the relevant Local Plan. The aim of these representations would be to ensure that the right facility is provided in the right location at the right time and to secure the sustainability objectives of national planning policy. These objectives are less likely to be addressed by the incremental development of existing estate.

5.29 As planning is ultimately about people and their environment, prior consultation is often vital to the success of a scheme. This is even more the case with the NHS which is seeking to provide a public service using public monies. An important aspect of the sustainability of the proposal is the degree of public support for the need for the project. A convincing need assessment submitted as part of the representation, therefore, can be valuable.

5.30 As part of the representation process to the Local Planning Authority, and potentially as part of the testing of the Local Plan at Inquiry, it may be necessary to demonstrate that what is proposed compares well to alternative locations. In cases where development projects are large or are environmentally or socially sensitive, some planning authorities are beginning to request sustainability appraisals of new development proposals. The format of these is extremely variable and can be submitted either as part of the representation process or later, as part of an environmental statement or as a supporting statement to accompany the planning application.

5.31 There are a number of appraisal methodologies but none has become predominant. They do not produce absolute measures but provide the basis for testing and comparing the sustainability of new projects against alternative proposals or against the current position (the "do nothing" scenario).

5.32 The checklist in [Table 7](#) is included as an example adapted from the approach adopted by one Local Authority in the assessment of sustainability. This is a generic approach; not all the questions are relevant to all developments.

CASE STUDIES

Neptune Health Park, Tipton

5.33 This is a new-build practice that has relocated from existing premises about 300 metres distant. Tipton was the recipient of City Challenge regeneration funding from 1993 to 1998. From a health standpoint, it is an area of health need with levels of mortality and morbidity higher than regional and national averages for a variety of lifestyle-linked reasons.

5.34 The capital monies provided through City Challenge did not increase the range of services provided in Tipton, but provided the following benefits:

- a. enabled the upgrading of premises and facilities for all the services provided. These could not have been afforded separately;
- b. enabled their co-location onto a landmark site, close to the town centre and with good public transport links;

- c. remediated a contaminated, brownfield site. The involvement of British Waterways secured environmental improvements along the canal; and
- d. provided additional focus to the community through the provision of social facilities.

5.35 The centre's emphasis is on innovative primary care and promotion of health rather than treatment of illness. The site also includes a well-used Health Information Centre, community rooms and a refreshment area. Other innovations include physiotherapy, chiropody, an optician, a pharmacy, a Citizens' Advice Bureau and a range of community nursing inputs. It was also planned to include facilities for minor surgery and X-rays.

5.36 The practice acts as a health resource for Tipton generally in support of other practices. It is a clinic location for visiting consultants and was designated a Personal Medical Services pilot scheme which establishes GPs with particular expertise to accept referrals from other Tipton practices. Both these arrangements avoid the need to refer to hospital services, so saving delay and travel.

5.37 Community involvement undertook a number of forms. There was community consultation on the range of services to be provided as well as the roadshow presentations of the scheme, which sought suggestions on the building layout and fabric.

For more information on sustainability at Neptune Health Park, contact Max Fordham and Partners, on 020 7267 5161.

Lawley Clinic, Telford

5.38 Lawley Clinic is a new-build practice created mainly as a consequence of the expansion of Telford New Town. It provides an example of good practices for location and partnerships. The practice aims to provide primary healthcare in an area with no current provision that is expected to grow steadily over the next five years. The Lawley area was designated for a population of 1000 by the year 2002, and the population is expected to grow to over 6000 in that time.

5.39 Apart from the growth of the neighbourhood, there are adjacent areas of high mortality and morbidity from coronary heart disease, lung cancer and other lifestyle-related disorders. These areas also display social deprivation with inequalities in healthcare provision and uptake of services. There has been a history of practices fragmenting in the local area which has created difficulties in introducing team working and innovation.

5.40 A broad-based Health Partnership Consortium comprising the district council, health authority, health trusts, community and voluntary sector representatives developed a health strategy to co-ordinate effort and budgets. A new model of general practice is proposed for this area. It will offer a flexible approach to the delivery of primary care services, including the following:

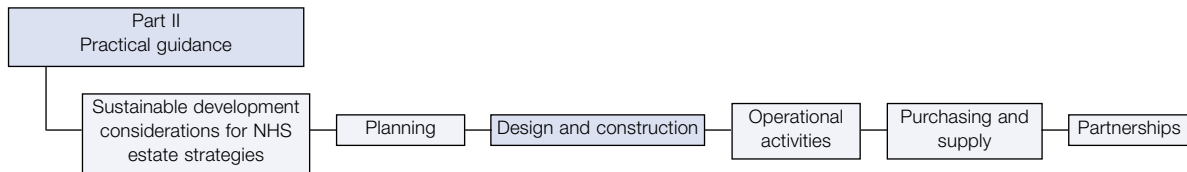
- an annual business planning cycle based on health needs assessment. This assessment was based on a joint community profile undertaken between the health and local authorities. Of particular note was a profiling of the new population based on expected age structure and migration patterns;
- a Primary Healthcare Team (PHCT) contract for service provision that would include all General Medical Services. A single devolved budget for service provision will be based on an agreed primary care resources allocation formula combining GMS and HCHS budgets;
- an extended PHCT including linked social workers, mental health services, occupational therapy and the voluntary sector. A flexible workforce moving skills beyond traditional professional boundaries by developing new skills, roles and responsibilities;
- new custom-built premises.

5.41 The Lawley area includes land reclaimed from former opencast workings.

5.42 The proposed practice site is centred, along with other planned community facilities, within the main planned housing developments. Most of these areas and employment areas are situated within 1000 metres of the practice site, linked by footpaths. Bus services will link the neighbourhood to Telford Town Centre. Both these attributes will increase ease of access to the site and minimise the need to use private cars.

For more information on sustainability at Lawley Clinic, contact the Health Strategy Co-ordinator, Telford and Wrekin Council, on 01952 202100.

6 Design and construction



INTRODUCTION

6.1 Design and construction are two key stages in providing an efficient and sustainable NHS estate. This chapter includes information on sustainability criteria for both design and construction and then considers how the NHS, acting as a client, can procure sustainable buildings.

6.2 NHS Estates is currently working with the Building Research Establishment to develop an Environmental Assessment Tool (NEAT) for considering new hospital design and construction. This will be available in September 2001.

DESIGN

6.3 Initial design costs may represent only a fraction of the total cost of a building's construction, and even less of its lifetime operational cost. However, by the time a building has been built, up to 80–90% of its life-cycle economic and ecological costs have already been made inevitable (see 'More for Less', Design Council, 1997).

6.4 Most people would think that there is greatest potential to build sustainability into design when beginning with a clean site. However, great benefit can also be achieved from renovation of existing buildings (avoiding the need for expensive and resource-intensive new construction), and the renovation and modernisation of an existing building should always be the first consideration.¹ Although some techniques require particular building configurations that cannot be retrofitted, many approaches will work as well within an existing building as in a new one.

6.5 Devoting sufficient time and resources to the design phase of a project can yield huge benefits in building quality and performance. It can also enable savings to be made in other aspects of the construction process, so that total construction time and cost are kept low. The rest of this chapter considers different aspects of sustainable design and how they relate to improving the performance, flexibility and comfort of a building.

¹ In some old facilities major modifications may not be possible due to listed building conservation status.

Building and site layout

6.6 The following aspects of site layout affect the potential for sustainability in a building:

- Building shape and location. Low-level buildings (less than four floors) reduce the need for vertical movements (which are energy intensive) and are better protected against heat loss through wind chill. Clustered buildings use less space, require less connectivity (roads and paths) and can protect each other from wind chill. Care needs to be taken to ensure that high winds are not generated in corridors between buildings. This can be achieved by irregular building arrangement.
- Location of services. Related services should be located together, thereby enabling areas with similar usage and service requirements to be kept together. Related departments should be located close to each other and, if possible, on the same floor. This reduces the amount of on-site transportation required and minimises use of lifts (see case study: Norfolk and Norwich Hospital (paragraphs 6.73 ff)).
- Access routes. Where possible, pedestrian and vehicular access routes should be separated. This will result in a safer and more peaceful environment for pedestrians. Areas of hardstanding should be reduced to minimise their contribution to surface water runoff.
- Consideration of supplies delivery and storage. The site should have an easily accessible entrance for deliveries and their storage pending distribution throughout the facility.
- Public transport access. Consideration should be given to facilitating the access of buses to larger sites and providing a specific disembarkation point for bus passengers (see case study: new Princess Margaret Hospital (paragraphs 6.57 ff)).
- Drainage. In Scotland 20% of poor quality waters are the result of urban runoff. Minimising the area covered with hardstanding, or using porous pavement surfaces, will reduce the pressures placed on storm drains and may enable these to be downsized (with a significant financial saving). Further

approaches can include slowing the velocity of runoff to allow settlement filtering, and passively treating the collected water. In many cases it is possible to significantly reduce or eliminate storm drainage requirements by using these techniques. The saved drainage expenditure can be used to pay for passive treatment techniques.

- **Building orientation.** The orientation of a building has a significant influence on its ability to use solar energy (see Passive Solar Design at [paragraphs 6.18–6.23](#)).
- **Shelter.** Protecting building surfaces from prevailing winds can significantly reduce their heat loss during winter. Existing topography, trees or man-made windbreaks can be used to provide shelter. Deciduous trees are often a good choice because they provide shading in the summer and allow more light (and heat) through in winter (the health effects of using trees are considered below).
- **Natural areas.** Research in the United States (Chris Baines, 'Greening the streets of stress city') has shown that green areas and trees are highly beneficial to human health and reduce stress levels. The research indicates that hospital patients can make more rapid post-operative recoveries, require less medication and are more amenable if they have a view of green space from their beds. If the additional benefit of increased staff wellbeing is considered, it is clear that aligning consultation rooms, beds and day areas with views of green space can have significant benefits to the operations of a healthcare facility – in addition to the environmental benefit of the natural area.

6.7 All of the above aspects can be incorporated into the design of any new healthcare facility. It is interesting to note that many of the more sustainable approaches to building and site layout are interconnected. For example, a low-level building can have a better functional differentiation, requires less lift energy and is less exposed to wind chill. Similarly, the use of natural sheltering can help to moderate internal temperatures and give those inside a feeling of being in a more natural environment.

Flexible and standardised design approaches

6.8 The development and refinement of an estate strategy is an ongoing process. In addition to continually improving the use of the estate based on feedback from performance indicators (see [Chapter 11](#)), the health service needs of a region will alter as demographics change, and the use of estate should reflect this. The continuously evolving nature of estate strategies makes it important that a sufficient degree of flexibility in the estate use be incorporated to ensure that, where possible, the existing estate can adapt to changing requirements.

6.9 A huge amount of energy and resources is used in the construction of a building and insufficient flexibility in design may mean that these investments are not maximised because the building cannot adapt to changing requirements. A flexible design is also a more valuable design because, should the building no longer be required for use by the NHS, it can more easily be used for alternative purposes. This avoids the need for demolition and construction and also means the site may fetch a higher price when sold.

6.10 Flexibility in a building has two main attributes:

- ability to change the interior layout of the building at some point in the future; and
- rooms that are sufficiently general in size, shape and services to provide for a range of uses.

6.11 Using an outer supporting frame in construction can eliminate the need for interior supports, thereby enabling re-design of the interior at a future date.

6.12 To achieve a flexible interior layout it may be necessary to have some rooms slightly smaller or larger than is required in design specifications. The benefit of being able to turn an office into a consulting room, or a consulting room into an overnight room for relatives, makes slight departures from specifications worthwhile. However, not all rooms in a hospital can be even approximately the same size, and some require a much higher level of services (for example medical gases, heating or ventilation). Therefore, it is useful to determine a limited number of room types and to seek to standardise these rooms as far as possible (see case studies: Norfolk and Norwich Hospital ([paragraphs 6.73 ff](#)) and Small Heath Health Centre ([paragraphs 6.86 ff](#))).

Integrated energy-efficient design approaches

6.13 Sustainable building design can, in some instances, use more traditional building styles and techniques; for example using the sun as a heat and light source, and using walls and flooring as heat sinks to reduce the size of internal temperature changes. However, there are also many technical innovations that can be brought into building design to enable higher performance, such as low heat-loss windows and energy-efficient lighting. This chapter discusses some of the techniques that can be applied and how they can be used in combination by employing whole-system approaches.

Insulation

6.14 Effective insulation is the first step in maximising the internal performance of a building. Insulation works to moderate the internal environment of a building, helping to maintain a comfortable temperature in either cold or hot weather. Insulation forms the bedrock of an

energy-efficient building, be it an acute hospital or small primary care facility.

6.15 Increasing the specification of insulation in a new building, or during refurbishment of an existing building, can result in major energy savings. Going beyond this, it is also possible to achieve reduced capital investment through insulation. In many cases it is sensible to fit insulation beyond that appearing economically viable through energy savings, because the increased insulation enables significant downsizing of mechanical components.

6.16 Areas where high levels of insulation in a new building can significantly improve performance are as follows:

- windows – these are one of the main sources of heat loss from a building (around 20% of the energy used in a building can be lost through its windows). Low emissivity windows (double-glazed, with a surface coating that reflects heat back into a room) can significantly reduce these losses;
- walls – around 8% of the energy used in a building is lost through its walls. Cavity insulation can help to reduce this. Wider gaps between wall cavities can improve insulation, while thicker walls provide thermal mass that absorbs heat during the day and releases it into the building at night;
- roofing – around 6% of the energy used in a building is lost through its roof. A high specification of insulation in the roof will reduce energy use, particularly on upper floors. Roof insulation is particularly important on low-storey buildings.

6.17 Significant cost savings can be achieved by specifying higher levels of roofing insulation (see case study: new Princess Margaret Hospital (paragraphs 6.57 ff)).

Passive solar design

6.18 Passive solar design (PSD) can be applied at a number of levels within different types of healthcare organisation. At its simplest, PSD involves locating services in areas where they can achieve most benefit or are least affected by solar energy. For example, areas such as wards or waiting rooms benefit from increased levels of daylight, while daylight can cause significant glare problems for VDU operators. As a result, care should be taken when locating functions in areas where a lot of natural lighting is used.

6.19 In addition to allowing natural light into a building, solar energy can also heat. The management of this heat may require shading to prevent overheating inside, or in some cases it is possible to utilise this energy to help heat and ventilate the building. This second, more advanced use of PSD can result in highly efficient

buildings with tranquil internal environments (due to the lack of noise from mechanical ventilating equipment) and lots of natural air and light.

6.20 While it is more difficult to retrofit advanced PSD attributes, it is not a difficult process in new buildings (see case study: new Princess Margaret Hospital (paragraphs 6.57 ff)).

6.21 Some important aspects of PSD are as follows:

- the main façade of a building should face to the south – maximising heat and light gain;

Maximising heat gain is only suitable for buildings designed to utilise thermal currents for passive ventilation. In non-passively ventilated buildings, external shading can be used to prevent overheating.

- buildings should be sited to avoid overshadowing of one building by another;
- glazed areas should have external shading capabilities to reduce overheating and glare;
- buildings should be shallow planned, or where deeper planned, “light shelves” used to reflect light deeper into the building;
- natural ventilation can be achieved through operable windows and vents and also through the use of atria, which act as heat stacks, drawing cool air into the building as hot air rises and is released from the top. For further information see HFN 26, ‘Refurbishment for natural ventilation’, NHS Estates;
- solar heating during colder periods can be achieved by circulating the hot air generated in atria throughout the building;
- when used, atria should be highly controllable with vents, blinds and shading. These features can be controlled electronically to monitor conditions and adapt accordingly. The use of atria for building ventilation is restricted in some areas of hospitals because of the need to preserve fire breaks (under hospital fire regulations), which also restrict the flow from ventilation. Where atria cannot be used as part of a PSD system, they require significantly greater levels of heating, cooling and ventilation, requiring additional energy and costs;
- for PSD to be effective the building envelope must be well insulated and sealed from unwanted drafts. This maximises the benefit that can be gained from using the sun’s energy.

6.22 Some of the benefits of PSD are:

- reduced need for artificial lighting (in an office up to 40% of energy costs can be spent on lighting);

- higher quality internal environment with a more tranquil, natural and open atmosphere; and
- reduced need for heating, cooling and ventilation services – these services will always be required in a hospital because of activities that require specific internal conditions or high levels of ventilation, but it should be possible to reduce the size and use of mechanical systems with effective PSD.

6.23 More detailed information on PSD can be found in ‘Planning for passive solar design’, published by the Energy Efficiency Best Practice Programme (EEBPP) and the Department for Trade and Industry (DTI).

Building services

6.24 Although building services need to be an integral part of the design of the building, they will optimise the building as a system only if they are designed in harmony with it. For example, the use of extra insulation in windows, walls and roofing can significantly reduce the demands made on heating, cooling and ventilation services. It is therefore possible to reduce the size of this plant, and as a result, both its capital and operating costs.

6.25 Further guidance on the selection and operation of high performance building services is provided in [Chapter 7](#).

Whole-life costing of materials

6.26 A whole-life costing approach looks at all the costs that arise over the life of a building and tries to minimise these, even if it requires more expenditure at certain stages of the life-cycle. There are three stages during the use of a product that influence its whole-life cost: initial cost, operational, maintenance and replacement costs, and end-of-life disposal costs. Each product will have a different spread of costs across these stages, but in the vast majority of cases the operational, maintenance and replacement costs will be far larger than either the initial or disposal costs. As a result, the use of additional or possibly more expensive materials can save many times the additional financial outlay over its life (see case study: new Princess Margaret Hospital ([paragraphs 6.57 ff](#))).

6.27 Another concept, related to whole-life costing, is whole-systems thinking. Here it is important to consider all the factors that go into the life of a building when determining the cost effectiveness of any individual action. An approach that is uneconomic when carried out alone can be vital in enabling a second (or third etc) technology which has great benefits. A good example of this arises when considering the heating and ventilation systems of a building (see case study: Continental Office Plaza ([paragraphs 6.89 ff](#)) and new Princess Margaret Hospital ([paragraphs 6.57 ff](#))). In these cases the

economic advantages of improving the insulation performance of the building are not fully realised until it is remembered that these enable its heating and ventilation systems to be dramatically scaled down, resulting in a cheaper capital cost as well as reduced operating costs.

Embodied energy and other environmental considerations for building materials

6.28 Production of building materials in the UK accounts for around 10% of national energy consumption annually (see SP94, Volume 2, ‘Environmental issues in construction’, CIRIA). Selection of building materials that require less energy to produce, are easier to recycle, require less transportation or use few non-renewable resources can significantly reduce the impact of buildings on the environment. The Building Research Establishment produces ‘The Green Guide to Materials Specification’, which provides comparative information on the environmental impacts of different materials, on a functional rather than a weight basis, including consideration of the number of times they would need to be replaced over the life of a building (assumed to be 60 years).

6.29 The ‘Green Guide to Materials Specification’ does not consider the efficiency of the different materials in use. This should be the main factor influencing selection in most cases. Where suitability is similar, the environmental impacts of producing different materials can make a great difference to the sustainability of a building.

CONSTRUCTION

6.30 In April 1999 the Government launched its strategy for sustainable construction, ‘Building a better quality of life: a strategy for more sustainable construction’ (DETR), based around aims of improving profitability in the industry and quality in buildings, achieving good relations with stakeholders and protecting the environment, both during the construction process and in the operation of the finished building. Although the NHS is not involved in construction activities, it does procure and use these buildings, which means that it has a significant influence on how the construction process is carried out, both in selecting contractors and specifying working practices.

6.31 Sustainable construction involves:

- minimising the environmental impacts of construction through specification and monitoring of construction activities. Many of the environmental impacts arising from construction are predetermined by the design specifications for the new building. However, management of site activities and material sources

can significantly reduce the impacts from these processes;

- working to maximise the social benefits that can be achieved from construction projects. Construction involves a large number of people and affects the locality in many ways. By working with contractors to maximise the local benefits of the project, the NHS can help to build community links from an early stage.

6.32 From the NHS estate's perspective the key drivers for sustainable construction are as follows:

- a. the construction process represents the first physical impression that local people will have of the facility;
- b. construction processes are amongst the most energy- and resource-intensive activities and as a result are prominent in Government sustainability objectives (see box below);
- c. sustainable construction processes can reduce construction costs and improve the quality of the finished site.

Minimising environmental impacts during construction

6.33 Environmental aspects of construction processes relate to:

- a. manufacture and transportation of construction materials (these activities each account for around 12% of total UK industrial energy consumption);
- b. efficient use of materials on-site;
- c. ecological and nuisance impact in the vicinity of the construction site; and
- d. pollution incidents.

6.34 The first, most obvious way of minimising construction impacts is to re-use existing buildings. [Chapter 4](#) considers some of the aspects that are important in deciding whether the existing built estate can meet present and future needs. If new construction is necessary, environmental impacts from material use can be minimised by management of the construction process and materials suppliers.

Sustainable construction and public buildings

During 2000 all Government construction clients were expected to endorse a programme which required them to adopt within three years an Action Plan for more sustainable construction procurement.

By 2002 all Government departments and agencies are committed to base all their construction contracts on the principles of 'Achieving Excellence' (HM Treasury), the Government response to the 'Rethinking Construction' report of Sir John Egan's Construction Task Force. It launches a new vision for the construction industry, which:

- focuses on the needs and expectations of its customers and other stakeholders;
- improves profit margins;
- measures and compares its performance;
- learns from others and shares experience;
- develops and respects people; and
- undertakes work in an ethical and sustainable manner.

NHS ProCure 21 (see [paragraphs 2.21–2.23](#)) implements the 'Achieving Excellence' and 'Rethinking Construction' principles within the NHS.

The Government has launched a Construction Best Practice Programme (CBPP) and Movement for Innovation (M4i) to seek out best practice against the above criteria and to enable benchmarking of performance using indicators.

Further information on applying 'Achieving Excellence' principles to procurement and the use of key performance indicators to measure contractor performance can be found at the following websites:

DETR – <http://www.detr.gov.uk>, CBPP – <http://www.cbpp.org.uk> and M4i – <http://www.M4i.org.uk>

Further information on NHS ProCure 21 can be obtained from NHS Estates at the following website: <http://www.nhs-procure21.gov.uk>

Minimising construction waste on-site

6.35 Only those materials that will be needed immediately should be present on-site. Stockpiling of materials increases the likelihood of damage and waste of resources (13 million tonnes per year or 18% of all construction and demolition wastes are thrown away unused). Efforts should also be made to ensure that delivery vehicles carry full loads when visiting the site thereby minimising transportation impacts and nuisance. These objectives are not incompatible, but do require close communications between the construction contractor and their supply chain, and good project management to make sure construction activities are phased correctly (see case study: new Princess Margaret Hospital ([paragraphs 6.57 ff](#))).

6.36 Even with careful inventory control, significant quantities of waste will arise from construction processes. This waste can be recycled through the supplier in some cases, or can be disposed of to specialist recyclers. Organic wastes (paper, cardboard, wood etc) can be composted on-site and used to supplement topsoil in landscaping the finished site. One construction company estimates that through effective waste minimisation, recycling and recovery it will be possible to halve the amount of waste requiring disposal to landfill from construction of a new regional hospital in comparison to an equivalent hospital project carried out using traditional methods.

6.37 Minimising waste and ensuring that all construction activities add value to the finished building is known as “Lean Construction”. Further information on Lean Construction techniques can be obtained from the CBPP (<http://www.cbpp.org.uk>).

Sourcing materials sustainably

6.38 The environmental impacts involved in production and delivery of different construction materials will vary according to the type of material and the amount of transportation involved in delivery. Therefore, even working within the constraints of a design specification, the type and source of materials used for construction could be selected on sustainability grounds as well as value for money (vfm).

6.39 Sustainability criteria when selecting suppliers for construction materials include the following:

- source of raw materials – consideration should be given to the impacts of extraction of different materials, their scarcity, the energy required and the employment conditions for those involved in materials extraction;
- manufacturing and use of recycled components – suppliers using more energy-efficient production

techniques or greater quantities of recycled materials in their processes should be preferred;

- transportation – environmental costs from transporting building materials are huge and should be minimised where possible;
- quality and life expectancy – high-quality products will provide better service and user satisfaction and are likely to last longer. Longer life expectancy can significantly increase the efficiency of resource use;
- ability to recycle – an increasing number of suppliers are taking back waste materials for recycling. Selecting a supplier able to do this saves resources and reduces waste disposal costs.

6.40 When procuring construction materials it is important to ensure that criteria for vfm are met by the purchasing choice, however this does not mean that sustainability criteria cannot be included (see [Chapter 8](#)).

Minimising local impacts

6.41 Construction activities can generate significant amounts of local disruption to both the environment and people. Actions that can be taken to reduce local impacts are summarised by the Considerate Constructors’ eight-point code of practice (see [box on page 35](#)). NHS project managers should ensure that all site operators are committed to the objectives of this scheme.

Control of construction pollution

6.42 Construction activities are responsible for more notifiable pollution incidents than any other industrial activity. There are a number of potential pollution sources on a construction site including:

- fuels and oils for plant and vehicles;
- construction materials (cement, fillers, insulation, solvents and paints can all cause off-site pollution);
- construction wastes if incorrectly stored;
- noise; and
- light.

6.43 Risk assessment procedures can be used to identify substances or activities that have potential to cause harm to the environment and estimate the likelihood of such an event occurring. Where the combination of hazard and probability indicate that a pollution risk is of concern then management steps should be taken to reduce the risk (either by removing the hazard or by decreasing the likelihood of an event). Such risk-management procedures could include:

- secure storage of hazardous substances;

Considerate constructors' code of practice

Considerate – to be considerate to the needs of all those affected by the construction process, and of its impact on the environment. Special attention to be given to those with sight, hearing or mobility difficulties.

Environment – to be environmentally aware in selection and use of resources. Paying particular attention to waste management and avoidance of pollution. Using local resources wherever possible and keeping noise to a minimum.

Cleanliness – keeping the site clean and in good order and ensuring the surrounding area is kept free from mud, spillage and any unnecessary construction debris.

Good Neighbour – undertaking full and regular consultation with neighbours regarding site activity from pre-start to final handover. Providing site information and viewing facilities where practical.

Respectful – promoting respectable and safe standards of behaviour and dress. Lewd or derogatory behaviour should not be tolerated under threat of the strongest possible disciplinary action.

Safe – ensuring all construction operations and vehicle movements are carried out with care for the safety of passers-by, neighbours and site personnel.

Responsible – being responsible for the understanding and implementation of the scheme by all site-related personnel.

Accountable – being accountable to the public by providing site contact details and being available to deal with their concerns and develop good local relations.

Source: Construction Industry Board, <http://www.ciboard.org.uk>

- operating procedures for safe working with hazardous materials; and
 - control over noise and light sources on-site (such as timing of activities, and minimising the frequency and level of events).
- 6.44** Pollution risks can also be reduced by adopting a Lean Construction approach and minimising the quantity of these materials on-site.
- 6.45** Further information on assessing environmental risks can be found in the updated DETR 'Guidelines for Environmental Risk Assessment and Management'.
- Maximising social benefits**
- 6.46** Major construction activities, such as the building of a new hospital, can have a significant impact on the local economy over the period of construction, creating hundreds of jobs directly and many more indirectly. Smaller construction activities (smaller healthcare facilities or renovation projects) will also benefit the local economy and every effort should be made to maximise the social benefits of construction as well as minimising the costs (see above).
- 6.47** Ways of maximising the benefits of construction for local communities include:
- employing local people to work on-site and providing them with training opportunities (ability to do this will be related to vfm or specific policies, see [Chapter 8](#));
 - using local suppliers for non-specialist services without undermining the delivery of vfm or without otherwise contravening the rules and regulations governing public procurement (ability to do this will be related to vfm or specific policies, see [Chapter 8](#)); and
 - working with local groups who may be able to make use of site waste materials or contribute to the development of the site (see case studies: new Princess Margaret Hospital ([paragraphs 6.57 ff](#)) and Albany Lodge ([paragraphs 6.80 ff, 9.25 ff](#))).
- 6.48** Working with and consulting local communities during construction provides a sound basis for incorporating the new facility into an area.
- PROCURING SUSTAINABLE BUILDINGS**
- 6.49** In managing the process of design and construction of new or renovated estate it is essential that the NHS project manager provides leadership and drive for maximising its potential sustainability contribution. While sustainable construction concepts are becoming increasingly well known and understood within the industry, the financial incentives in most contracts work against the adoption of sustainable approaches, particularly whole-life costing (see [Chapter 2](#)). It is therefore the responsibility of the client to ensure that these considerations are taken on board in the selection of contractors and in specifying the building design.

Selecting contractors

6.50 Approaches to using sustainability criteria in selecting contractors are considered in [Chapter 8](#).

6.51 Government targets for construction procurement place a strong emphasis on the use of integrated supply chains and partnered teams of contractors, this is reflected in NHS ProCure 21 which implements Government policy within the NHS (see also [paragraphs 2.13–2.14](#)). By 2002 it is expected that all construction work will be procured using these methods.

6.52 Further information on the procurement of design and construction services can be obtained from NHS Estates (<http://www.nhs-procure21.gov.uk>), the Government Construction Clients' Panel (<http://www.hm-treasury.gov.uk/pub/html/gccp>), the Construction Clients' Forum or the Construction Round Table (<http://www.crt.org.uk>). The Government Construction Clients' Panel has recently released 'Achieving sustainability in construction procurement', guidance on procedures to be adopted by public sector clients to enhance the sustainability of public buildings.

Briefing the design team

6.53 Sustainability must be considered at the earliest possible stage in the building life-cycle, and all the parties involved with the design, construction and use of the building should be in close communication throughout. Building services need to be integrated with the design at a very early stage so that one can complement the other. In many cases a more sustainably designed building will have lower construction costs as well as lower running costs because of the advantages of being able to downsize major mechanical components. However, this can only occur if sustainability issues are taken into consideration right at the heart of the project. "Optional extras" for saving energy usually represent an additional capital cost and do not achieve the performance of better integrated systems.

6.54 Because of the financial incentives that act against an individual company increasing its own costs, it is important that the NHS project manager is aware of the whole-life costs of different types of building design and is able to actively manage the design process. Where possible, capital and operational costs of the *whole design* should be counted together for several different design types to allow comparison.

6.55 The estate project manager should not specify building requirements too tightly, in order to give the design consultants room to optimise the building system. However, by incorporating aspects such as high levels of insulation (above those required by building regulations), high efficiency service plant and PSD into

the design brief it will be possible to significantly reduce the whole-life costs of the building with little or no increase in capital cost. NHS Estates and the Department of the Environment, Transport and the Regions has commissioned the Building Research Establishment to produce an environmental assessment tool for the health service (NHS Environmental Assessment Tool (NEAT), BRECSU, available September 2001). It provides useful information on environmental building design and a checklist for project managers to work with when specifying and procuring buildings.

6.56 Whole-life approaches are best implemented at the new-build stage, but it is equally feasible to adopt them when modifying existing buildings.

CASE STUDIES

New Princess Margaret Hospital, Swindon

Background

6.57 The scheme involves the provision of a new acute hospital to serve Swindon and Wiltshire. The existing Princess Margaret Hospital in Swindon, built in the 1950s, had fallen into a state of disrepair and was experiencing problems in catering for the number of out-patients. It was estimated that refurbishment of the hospital would cost £48 million. However, this would not enable internal layouts to be improved, and more importantly, the delivery of clinical services would be compromised. Funding for the scheme was secured through the Government's Private Finance Initiative (PFI), and The Hospital Company (part of Carillion plc) was asked to undertake the design, build and operation of the hospital.

6.58 Sustainable development principles have been used extensively throughout the design and construction processes. A Sustainability Action Plan for the hospital was produced providing short-, medium- and long-term actions that can be taken to help the environmental and social credentials of the Swindon project.

6.59 It is estimated that the adoption of sustainable development ideas during the design and construction phases of the project will not increase the capital cost of the hospital and will reduce its operating costs and environmental impacts significantly. It is estimated that the hospital will produce only about 80% of the CO₂ generated by an equivalently sized traditional hospital. After two years The Hospital Company will consider the use of CHP and if appropriate this could result in further emission reductions to 60% of an equivalent hospital. These reduced CO₂ emissions mean less environmental impact and lower energy costs.

6.60 Significant construction cost savings were achieved by the use of supply chain management and



THE NEW PRINCESS MARGARET HOSPITAL, SWINDON: CAD IMAGE OF HOSPITAL POST-REFURBISHMENT BY IMPACT INTERACTIVE, PROVIDED COURTESY CARILLION PLC

ensuring that much of the site waste was recycled by the supplier or re-used on-site. It is estimated that the total waste disposed of to landfill will be around half that generated by the construction of an equivalently sized hospital using traditional methods. Reducing the amount of waste disposed of not only saves resources, but also reduces waste disposal costs.

Planning

6.61 The original Princess Margaret Hospital was located in the old part of Swindon, hence there was little room to expand the site. It was run down and suffered from access and car parking problems. It was anticipated that the new hospital would need to serve a catchment area that had grown from 170,000 in the 1950s to 350,000 in the 1990s. Further, advances in treatment and the availability of new services would also have to be incorporated into a new, larger facility.

6.62 The Swindon and Wiltshire NHS Trust started looking for a new site in the mid-1990s. A site selection process was undertaken and it was eventually decided to locate a new hospital on an edge-of-town, greenfield site. The site location conflicted with the planning policies contained in the Development Plan for the area because it was in an open countryside location. An environmental impact assessment, which was submitted with the planning application, assisted in securing planning permission for the scheme, in principle.

6.63 One of the successes of the scheme is the speed with which the construction of the new hospital commenced (in October 1999). As a PFI project the

construction programme was relatively fast-track and following the approval of funding, start on a new hospital was expected in 18 months. This did not take into consideration the planning process. Planning permission took 14 months to secure. Had the application been 'called-in' by the Secretary of State and the planning issues re-examined at Central Government level, the time period for determination may have been extended by another 12 months.

Design

6.64 Sustainability concepts have been used extensively in the choice of building materials, the design and the specification of the new hospital. For example:

- the hospital was designed to allow as much natural ventilation and daylighting as possible by being shallow planned. A central atrium allows daylight into the centre of the building;
- the building has been designed to be deconstructable, increasing the flexibility of the site for future uses. A standardised 300 mm flat concrete slab was used throughout to enable a wide variety of future uses to be accommodated. The building layout has been made as flexible as possible through the use of generic room plans for certain use categories;
- a high standard of insulation has been specified, reducing the number of radiators required on the top floor of the building and saving energy throughout the hospital's life. The cost of the additional roof insulation is estimated at £21,000, but the saving on radiators is £27,000, giving a lower net capital cost.

Add to this the reduction in whole-life running costs achieved through the higher standard of insulation (estimated at £213,000), the total financial benefit is around £219,000;

- material selection criteria incorporate whole-life costs and also ethical considerations. For instance:
 - the contractor is investigating the use of a natural treatment system for structural timber. This system will protect and maintain the wood during cleaning activities and remove the need for painting. The reduced maintenance requirements should result in a reduction in operating costs and the natural treatment system will give the hospital a more natural ‘feel’;
 - in selecting roofing materials PVC was avoided because of the contractors’ environmental concerns and some types of natural rubber were avoided because of the contractors’ ethical concerns over the production processes. Eventually, a recycled rubber product was chosen.

6.65 The hospital incorporates a public transport lounge to facilitate the journeys of passengers using buses.

6.66 It is estimated that the finished hospital will produce up to 40% less CO₂ in use than an equivalently sized, traditional hospital (depending on the extent to which CHP is used). The capital costs for the project are expected to be no higher than normal, while the running costs are expected to be considerably lower.

Construction

6.67 The construction of the new Princess Margaret Hospital Relocation, Swindon, is a Movement for Innovation demonstration project in the area of sustainable construction. The construction process has been designed in line with Lean Construction practices and involves developing a strong sustainability commitment from the whole supply chain.

6.68 Key aspects of the construction work include the following:

- supply chain management – all site contractors were asked to agree to a comprehensive sustainability action plan. Virtually all were happy to do this and pleased to be associated with such a project. To increase the contractors’ buy-in to the projects’ aims, each contractor was asked to prepare a sustainability action plan to complement the overall project plan;
- waste minimisation and management – it is intended that the construction of the new Princess Margaret Hospital will generate 50% less waste than an equivalently sized hospital constructed using traditional methods. This will be achieved through

segregating all wastes on-site and sending them for composting, recycling or recovery. For example:

- plasterboard, which represents around 20% of the site waste, is sent back to the supplier for recovery;
- paper, cardboard and timber is composted on-site and used to enrich the local soil. This has the benefits of cutting waste disposal costs and reducing the amount of expensive topsoil required for the site. The contractor is considering the distribution of any surplus compost to the local community;
- product packaging is returned to suppliers for re-use or recovery;
- less materials are stored on-site, reducing the potential for damage and wastage;
- transport minimisation, such as:
 - to minimise construction vehicle movements, all suppliers are encouraged to send full lorries to the site rather than those with just a few items. To achieve this without storing large amounts of material on-site requires a close integration of suppliers and site workers;
 - all vehicles coming onto the site are regularly tested for emissions;
 - a car-sharing and minibus-based transport plan is encouraged for site workers. Parking spaces for car sharers are located in preferable locations on-site;
- community involvement, such as:
 - construction is carried out using local employment as a priority;
 - construction workers include a number of New Deal placements working with other major employers in the area to deliver training and learning schemes to employees; and
 - extensive consultation carried out throughout the design and construction phases. An art competition was run in a local school and the results used to decorate the site.

6.69 The sustainable construction initiatives on-site are expected to be roughly cost neutral, but enormously beneficial to the environment and local communities.

Problems and surprises

6.70 The planning process highlighted conflict with sustainable development principles particularly in relation to the use of greenfield land, access and transportation. The Local Planning Authority (LPA), Swindon Borough Council, would have preferred a brownfield site within

the urban area of Swindon. However, this did not comply with the Trust's development requirements. The LPA also had concerns about the amount of vehicular traffic that would be generated by the proposal, particularly car journeys. An EIA was submitted in support of the planning application. It demonstrated how environmental and transport aspects could be addressed on-site. The EIA, alongside other issues, persuaded the LPA to support the scheme and recommend approval of the application. The LPA recognised that regional hospitals are important facilities that the public would demand, but by their very nature they create large amounts of vehicular traffic which conflicts with planning policy.

6.71 As a PFI project it was easier to make decisions design-based on whole-life rather than capital costs. Even here it was not straightforward because during the project tendering stage the vfm of the budgets for capital and operational costs were considered separately. However, there is now flexibility within these budgets enabling whole-life initiatives to be incorporated within the project.

6.72 The key requirements for bringing about more sustainable construction activities on this project were:

- committed leadership;
- culture change, based on training in the basics of sustainability and developing passion for finding a better way of working; and
- involving the supply chain and obtaining their buy-in to sustainability objectives.

For more information on sustainability at new Princess Margaret Hospital, contact the Site Manager, new Princess Margaret Hospital, Carillion plc on 01902 422431.

Norfolk and Norwich Hospital

6.73 The design of the new Norfolk and Norwich hospital incorporates a number of aspects of good sustainability practice.

6.74 The hospital is made up of five area types:

- a. in-patients;
- b. diagnostics;
- c. out-patients;
- d. office areas; and
- e. atria.

6.75 The hospital has been designed around these area types, based on studies of patient and staff movements. The layout aims to minimise the distance of

transportation of patients and to reduce the use of lifts. The zonal pattern also allows the building management system to control the services supplied to different areas. For example, nine-to-five areas are separated from 24-hour areas so that they can have different management patterns.

6.76 The hospital layout has been designed to make maximum use of natural ventilation (especially in wards) without compromising a compact design. Those areas that need active ventilation have been located together. It is intended that the site use combined heat and power (CHP) for some of its heating and power requirement, however, this will not be installed until two years after commissioning to enable it to be accurately matched to the requirements of the operational hospital.

6.77 Rooms within the hospital have been designed with flexibility of use in mind. Based around a small number of basic room types, the room sizes and services have been standardised as far as possible to enable their use to change with requirements.

6.78 The hospital walls are concrete with brick cladding and are thicker than standard in order to act as thermal sinks, moderating day and night time temperatures. The thermal efficiency is further enhanced by the use of trees to shelter exposed areas. The choice of brick as a construction material was based on the whole-life maintenance costs as well as its relatively low purchase and construction costs.

6.79 In designing the hospital a great deal of consultation was carried out within the NHS and in the catchment areas (with 70 user groups and over 1000 people involved), to identify which designs were preferred and how the building layout could maximise the efficiency of health service staff.

For more information on sustainability at Norfolk and Norwich Hospital, contact Anshen Dyer Architects on 020 7663 2800.

Albany Lodge Community Treatment Unit, St Albans

6.80 The Albany Lodge Community Treatment Unit is a short-term care and assessment and day-care facility for mentally handicapped patients. The site was designed to reflect the style of other local buildings and is based around five-house clusters (this allows the patients to be cared for in specific medical or social groups without losing communal open areas).

6.81 Initially, the development was not popular with the local communities, but it gained greater acceptance when the site car parking area was allowed to be used for car boot sales at weekends. This helped to build links between the community and the facility and helped with gaining planning consent.



ALBANY LODGE COMMUNITY TREATMENT UNIT, WEST HERTS COMMUNITY HEALTH NHS TRUST: PHOTOGRAPH COURTESY MAAP

6.82 During the construction of the unit, two trees needed to be cut down and removed. Working with the local art college, the trees were used to build a series of sculptures for the grounds. The sculptures were appreciated by both staff and patients, and further work was commissioned from the art college because of its beneficial effect on the site's environment.

For more information on sustainability at Albany Lodge, contact Medical Architecture and Art Projects (MAAP) Ltd on 020 7613 2192.

Rushton Street Health Centre, City and Hackney Primary Care Group

6.83 The Rushton Street Health Centre is a new practice, housing four different practices and a total of 14 GPs. The design was based around a need for flexibility in the building both in the long and short term. Each practice wanted its own distinct space, but the facility needed to have the potential for unification, in order to be viable under different use scenarios that might arise. The aims also included the desire for the health centre to have a presence in the community to assist in the regeneration of the area.

6.84 A particular issue at this site (and one that may increasingly arise in the future as more facilities seek to combine services) was that some of the GPs wanted to part own the building while others did not (but did not want another practice as a landlord). To resolve this problem a third party developer was found to take

financial responsibility for the building, thereby enabling the development to proceed with all practices involved.

6.85 The approach to meeting a wide range of specific needs, while remaining sufficiently flexible to cope with unknown future needs, was to adopt a design based on four zones, each running right across the building. The first zone comprised parking and entrances, the second zone the reception desk, the third an open access space, leading to individual treatment rooms. The first floor contained additional treatment rooms and staff areas, while the second floor contained a large activity room and caretaker flat. Room sizes are standardised as far as possible and, by moving the internal partitions separating rooms and zones, it is possible to reconfigure the layout to suit different needs. At present the building holds four practices, but could easily be adapted to house one large practice or a number of smaller service centres.

For more information on sustainability at Rushton Street Health Centre, contact Penoyre and Prasad Architects on 020 7250 3477.

Small Heath Health Centre

6.86 This award-winning development incorporates the needs of a number of users on one site, including:

- a GP surgery;
- a mental health centre; and
- a family health centre.



SMALL HEATH HEALTH CENTRE, NORTHERN BIRMINGHAM MENTAL HEALTH NHS TRUST: PHOTOGRAPH COURTESY MAAP

6.87 The design is highly flexible with generic “soft” rooms and a free-standing frame enabling future changes in internal layout.

6.88 The health centre uses cedar wood cladding. This was chosen because of its low whole-life costs. It also has the benefits of a natural and warm feel. Maximum use of natural daylight is achieved through roof level windows running along the corridor of the main treatment area.

For more information on sustainability at Small Heath Health Centre, contact Medical Architecture and Art Projects (MAAP) Ltd on 020 7613 2192.

Continental Office Plaza, Chicago

6.89 By integrating initiatives in this 130,000-square-foot glass and steel office building, it was possible to recreate a cost-effective refurbishment of the building with a payback period of only around four years. Undertaking these activities independently would not have been economical, demonstrating the importance of looking at the whole building system when considering renovation costs and benefits.

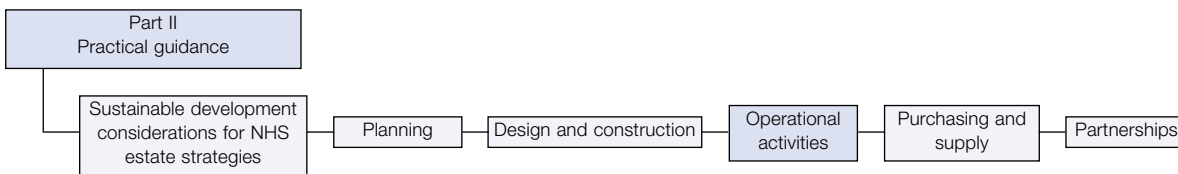
6.90 Simply replacing the heating, ventilation and cooling plant with more modern systems would have

had an unviable 111-year payback. However, by increasing the level of insulation (through the use of low-emissivity glass in the office windows) and by installing very energy-efficient lighting and appliances, it was possible to reduce the cooling load of the building by 85%. This enabled the replacement mechanical equipment to be 75% smaller than would otherwise be required (saving £130,000 – enough to pay for the additional cost of the higher-efficiency windows and lighting). This cut the payback period of the upgrading to just over seven years. The addition of a building energy management system reduced the payback period further to around four years.

6.91 None of the initiatives would have been cost effective alone. A scaled-down mechanical system could not have worked unless the building energy requirements could first have been reduced. However, when co-ordinated they enabled a building that would otherwise have been demolished to be brought back into use with a quarter of its original energy requirement.

Case study from Lovins A., Lovins H. and Hawken P., ‘Natural capitalism: the next industrial revolution’, 1999.

7 Operational activities



INTRODUCTION

7.1 This chapter considers the ways in which the sustainability of the operational phase of a building can be maximised through the design and management of building services and activities, including:

- energy management;
- water management;
- waste; and
- transport.

7.2 In common with all other life-cycle stages, different aspects of the operation of estate are interconnected and the effective use of management systems will greatly enhance the benefits that can be achieved. The use of management systems to implement a move towards more sustainable estate control is discussed at [paragraph 3.8 ff.](#)

ENERGY MANAGEMENT

7.3 A sustainable building must consider how it can minimise its energy use and source its energy requirements in the most cost-effective and environmentally beneficial manner. Key issues considered in this chapter are:

- minimising energy use in building services; and
- meeting on-site energy requirements.

7.4 Reducing energy requirements on-site and achieving more sustainable power generation will deliver a number of benefits to the NHS, such as:

- financial savings;
- a more controllable and better quality internal environment;
- reduced energy requirements, which will help the NHS to contribute to:
 - reducing emissions of atmospheric pollutants arising from heat and power generation (with associated improvements in environmental quality and health); and

– Government energy efficiency and emission reduction targets.

7.5 For the NHS the agreed target is:

- to reduce the level of primary energy consumption by 15% or 0.15 million tonnes of carbon from March 2000 to March 2010;
- to achieve a target of 35 to 55 GJ per 100 m³ energy efficiency performance for the healthcare estate for all new capital developments and major refurbishments; and
- that all existing facilities should achieve 55 to 65 GJ per 100 m³.

7.6 NHS Estates guidance in 'Encode' provides more technical guidance on the use of energy efficiency measures in site management (see [Part III](#)).

Minimising energy use in building services

7.7 It is worth reiterating that building services should form an integral part of building design. Upgrading of building services in existing buildings should be considered using whole-system approaches and involve a review of building components and insulation (see [paragraphs 6.13–6.27](#)).

Heating

7.8 Generation of hot water is considered later in this chapter and the use of solar energy and insulation to minimise heating requirements is considered in [paragraphs 6.13–6.25](#).

7.9 Heating services can be supplied efficiently and with greater control and comfort for users by considering the following:

- for wet central heating systems, thermostatic radiator valves should be used to minimise unnecessary heating and increase local control and comfort;
- pipework associated with the heating distribution system should be well insulated; and
- where the distribution flow rates vary with load, variable speed pumps should be considered.

Ventilation and cooling

7.10 In most healthcare facilities there will be a need for mechanical cooling and ventilation even if natural ventilation techniques can be used in some areas (the use of natural ventilation for building cooling is considered in [paragraphs 6.3–6.29](#)). The total amount of cooling and ventilation equipment can be significantly downsized through the use of natural techniques where possible. However, mechanical techniques for certain areas, particularly operating and diagnostic and intensive therapy units, will be necessary.

7.11 Mechanical ventilation can account for around 30% of electricity consumption in modern hospitals. Energy use can be minimised by making sure that ventilation is only used when necessary (see below on building management systems). Increasing the efficiency of fan motors and optimising duct size and location can have a significant impact on energy use of ventilation equipment.

7.12 As well as optimising cooling and ventilation equipment it is also important to minimise heat sources within a building that can add to the cooling load and thereby increase energy use. Where this is not possible sensible heat gains should be removed close to the source by mechanical ventilation, or grouped away from the general work environment. Examples of such heat sources include:

- sterilizers;
- medical equipment; and
- laboratory equipment.

7.13 Mechanical ventilation or cooling provided around such equipment be focused on addressing the specific needs of the equipment and not cooling the wider working environment. Isolating such heat sources can help to reduce the amount of ventilation provided to that which is technically necessary.

Lighting

7.14 The need for artificial lighting during the day can be minimised by using PSD techniques (see [paragraphs 6.3–6.29](#)). Where artificial lighting is required it is possible to achieve major efficiencies with short payback periods. Most hospital areas can be lit by using less than 2.5 W per m² for 100 lux of illuminance (for further information, see 'Briefing the design team for energy efficiency in new buildings', EEBPP).

7.15 Using high-efficiency fluorescent tubes rather than traditional filament bulbs can achieve:

- huge energy savings;
- a significantly reduced cooling load for the facility;

- a longer life expectancy; and
- lower whole-life cost.

7.16 Even where fluorescent tubes are already in use it should be possible to achieve energy savings on replacements by using slimline tubes which save both energy and resources.

7.17 After lighting systems have been upgraded, additional savings can be achieved by considering lighting controls. At a basic level the labelling of light switches can significantly improve the control of lighting because it is clear which switches affect different lights. More sophisticated systems include:

- use of dimming systems that adjust the level of artificial light according to the level of natural light;
- occupancy sensing systems; and
- timed lighting controls.

Building energy management systems

7.18 Building energy management systems (BEMS) can be used to optimise the performance of on-site services. BEMS vary in sophistication and can be used to control virtually every aspect of the building operation. It is important to remember that within a hospital or health centre different buildings will have specific service requirements and BEMS must be flexible enough to accommodate these. Otherwise the levels of staff and patient satisfaction will drop and the system may be overridden, losing the possible efficiency gains.

7.19 Where highly sophisticated systems are used it is important that they are professionally maintained to gain maximum benefit (and avoid possible disbenefits). In some cases it is worth outsourcing control of a BEMS to a specialist company that can get optimal performance out of the system (see case study: Willows Residential Care Home ([paragraphs 7.96 ff](#))).

Good housekeeping

7.20 Adopting good housekeeping measures can help to maximise the performance of existing services and can result in substantial energy savings of around 10% in some cases. The EEBPP have released 'Good practice guide 52: Good housekeeping in the NHS' (BRECSU); key aspects are high-level commitment and grass roots support, backed up by targeted and monitored energy-savings initiatives.

7.21 It is often economical to employ a dedicated energy manager, either to cover larger facilities or to manage a range of smaller facilities within a trust. The work of an energy manager can be important in maintaining the effectiveness of energy-saving technologies. For example, at the Wansbeck Hospital

energy performance declined in the third year of its operation after it stopped using a dedicated manager to operate its energy-saving equipment.

Meeting on-site energy requirements

7.22 Hospitals use considerable amounts of energy, 24 hours a day. They use energy for a wide range of purposes such as heating, lighting, cooling, ventilation, and powering appliances. The energy requirement is either in the form of electricity bought in from a regional electricity supplier or from on-site generation using fossil fuels. Energy use in hospitals is a significant source of expenditure. In 1992 the NHS spent £300 million on energy; £125 million was on electricity (see 'Good practice guide 54: electricity savings in hospitals, a guide for energy and estate managers', BRECSU). Whether generated on-site or at a local power station, there are significant environmental and social costs associated with energy production, such as:

- emission of greenhouse gases, which contribute towards global climate change;
- emission of particulate matter (PM₁₀) with associated chronic health impacts;
- emission of oxides of sulphur and nitrogen, which contribute towards acidification; and
- depletion of non-renewable resources.

7.23 Off-site energy procurement is considered at paragraphs 8.34–8.35. This chapter considers the efficient generation of heat and power on-site. In most cases, the use of on-site power generation is more efficient than using off-site sources, but the potential savings are still considerable. In 1995, it was estimated that installing high-efficiency boiler plants in all NHS properties would save £6 million in fuel bills, and avoid the emission of 150,000 tonnes of CO₂ each year (figures from 'Energy efficiency in the health sector: the potential benefits of boiler replacement', BRECSU).

7.24 The most effective way to reduce the impact of energy generation on-site is to reduce demand. However, there are a number of actions that can increase the efficiency and reduce the impacts of energy generated on-site, such as:

- scale – ensuring that heat and power-generating capacity is well matched to the requirements of the facility. Many heating engineers will be tempted to over-specify plant sizes as a precautionary measure, but an oversized plant is less efficient to run and will have larger capital and maintenance costs;
- plant – specification of high-efficiency plant, for example using condensing boilers, which are the most efficient technologies for space and water

heating (see case study: Willows Residential Care Home (paragraphs 7.96 ff)). Use of CHP technology should be considered where appropriate (see "Use of Combined Heat and Power", below, and case study: Diana Princess of Wales Hospital (paragraphs 7.101 ff));

- fuel – consideration should be given to the use of gas as a fuel source (gas combustion generates less CO₂ for each unit of energy, is a cleaner fuel and has lower transportation impacts);
- monitoring – monitoring data on plant performance is essential to maximising its efficient use, otherwise plant may under-perform for long periods without detection. Although service quality may not be affected, fuel use will be significantly increased with associated financial and environmental costs;
- controls – plant controls can be used to ensure that operational time and intensity is closely matched to the facility's requirements whilst avoiding waste. In general, plant controls should be kept relatively simple. However, in some cases plant operations can be outsourced to specialist contractors, who will be able to install and maintain more sophisticated systems.

Use of combined heat and power (CHP)

7.25 Combined heat and power technologies utilise the waste heat generated from on-site electricity production to provide heating. The use of CHP for supplying part of the energy and heating requirements of a new building is now established good practice. Electricity supply is the most expensive source of energy for hospital use, representing around 42% of energy expenditure but only 13% of consumption (figures from 'Electricity Savings in Hospital: a guide for energy and estate managers', BRECSU). A CHP system will not reduce total energy demand, but by generating a proportion of the electricity requirement, whilst generating heat for the site, the total amount of fuel and costs involved are reduced considerably.

7.26 To be effective, a CHP plant should be appropriately sized to match the minimum space and water heating requirements of the hospital. This is likely to enable production of around 20% to 30% of the electrical requirements of the building. Larger CHP systems can be used if there is a need to provide absorption chilling for air-conditioning. To be sure that a CHP system is appropriately sized to meet the needs of the hospital, it may be useful to delay the installation of CHP in a new hospital for one or two years to enable heating and energy demand monitoring to take place (see case studies: Norfolk and Norwich Hospital (paragraphs 6.73 ff) and new Princess Margaret Hospital (paragraphs 6.57 ff)). In an existing hospital, CHP should

NEDALO CHP PLANT AT LAGAN VALLEY HOSPITAL
SHOWING GENERATOR INSIDE ACOUSTIC HOUSING:
PHOTOGRAPH COURTESY DOWN LISBURN TRUST



only be installed after the impact of other energy-saving measures is known. This enables the plant to be appropriately sized for the site's reduced energy requirements.

7.27 When using CHP it is important that plant operation is consistent with the energy and heating needs of the hospital and that the CHP unit is used to its capacity whenever possible. Failure to maximise the use of the CHP, or to effectively recover the heat generated, can result in its use being uneconomic. Therefore, when considering installation of a CHP system to an existing hospital, it is important to ensure that the site layout and distribution systems are suitable.

7.28 An important consideration when assessing the use of CHP is that appropriately installed CHP schemes qualify for exemptions from the climate change levy and for allowances on tax equivalent to expenditure on CHP technology (enhanced capital allowances – see the Government's Enhanced Capital Allowance website at <http://www.eca.gov.uk>). This acts as a further powerful economic driver for their adoption. To qualify schemes must meet DETR quality assurance standards. Information on this standard can be found at <http://www.chpqa.com>

7.29 Further information on the economics and technical aspects of CHP use can be obtained from the EEBPP, in particular Good Practice Guide 60 'The Application of Combined Heat and Power in the UK Health Service', as well as in NHS Estates' 'Strategic Guide to Combined Heat and Power'.

Use of wind energy

7.30 A wind turbine is in use at the Wansbeck Hospital in Northumbria. The existing turbine only supplies a relatively small proportion of the site's energy requirements (around 5%) and has an estimated payback period of around 19 years (figures from 'Low energy hospitals: Wansbeck General Hospital, Ashington, Northumberland – 1st year appraisal', NHS Estates). However, this technology is advancing rapidly and significantly more cost-effective turbines are now available. The impact of the climate change levy on energy costs may also help to make the use of wind turbines a viable consideration for some hospitals.

Heat recovery

7.31 Heat recovery is often combined with CHP to improve the efficiency of the generating systems, but can be effectively employed independently in many situations. Heat recovery involves the use of waste heat, from hot water pipes or ventilation shafts, to preheat incoming ventilation air.

Decentralised generation

7.32 Where hot water or steam (for sterilization) is required intermittently or at some distance from the main site, then it is usually more efficient to use small, localised boilers. These have the advantages of working independently from the main heating system (and therefore being more flexible) and requiring less distribution piping with associated losses.

WATER MANAGEMENT

7.33 Good water management can reduce costs if careful management practices are put in place which reduce the overall level of water consumption. Good water management contributes to maintaining a vital resource for all of the community. Obviously it is paramount when considering the management of water resources that necessary levels of hygiene are maintained.

Minimising water use

7.34 Actions that can be taken to reduce water consumption include:

- conducting a study into the main areas of water consumption on-site, such as toilets, catering, laundry, vehicle washing and portable water supply;
- ensuring that there is a good level of maintenance of water facilities and that periodic surveys of infrastructure are undertaken in order to avoid loss through leakage;
- contacting the local water company for advice on water management techniques and developing a scheme to implement them;
- undertaking a leak detection survey. The payback period for cost of repairs is often short; and
- evaluating the use of waterless urinals, automatic taps, spray taps and other retrofit water-saving devices.

7.35 In addition to reducing consumption significant economic benefits can be realised by ensuring that water company invoices correspond to site water use and that the site is being charged for water at the appropriate tariff rate.

7.36 The EEBPP guide 'Good housekeeping in the NHS' contains numerous examples of how basic housekeeping measures can save large amounts of water.

Recycling of greywater

7.37 Greywater is water that has been used for a domestic purpose (such as bathing, showering, or handwashing). It can be re-used for a secondary purpose that does not require water of drinking-water quality (such as WC flushing). While a greywater system can save a considerable quantity of water it is not without drawbacks. There is a need to partially treat the water on-site prior to its re-use and there are potential health risks associated with accidental exposure to greywater. Greywater recycling is most suited to larger buildings where economies of scale make the approach more attractive, however, the potential health risks

require further investigation and control before it is suitable for use within a healthcare environment.

7.38 Further information on water minimisation and the use of greywater can be obtained from the ETBPP, EEBPP, the Building Services Research and Information Association and British Water.

WASTE

7.39 The National Waste Strategy estimates that NHS trusts in England and Wales produce around 100,000 tonnes of clinical waste per year (figure from the 'Waste Strategy 2000 for England and Wales: Parts 1 and 2', DETR). With a disposal cost of between £180 and £320 per tonne (see the Audit Commission's 'Getting Sorted'), this amounts to a disposal cost for NHS trusts alone of around £34 million to £60 million a year. Economic instruments such as the landfill tax and climate change levy will have the effect of progressively raising the cost of waste disposal. As a result, reducing waste arisings will become an increasingly important means of reducing unnecessary expenditure. Environmental benefits from reducing the amount of waste generated include a reduction in the amount of natural resources and energy required and lower levels of contamination and pollution arising from waste disposal.

7.40 A recent NHS study to identify examples of best practice in waste minimisation in the NHS ('Healthcare Waste Minimisation: a compendium of good practice', NHS Estates) contains numerous examples of how NHS trusts have achieved increased efficiencies through waste minimisation. The report's survey of NHS trusts showed that many were incorporating recycling and segregation activities, but that there was still much work to be done to address waste issues at a strategic level. As a result, a second study looking at life-cycle approaches to waste management and reduction is currently being undertaken.

7.41 The Audit Commission's 'Getting Sorted' identified a number of opportunities for reducing, re-using and recycling waste. These included:

- reversing the growing tendency to use disposable equipment by re-introducing more re-usable equipment – although clinical requirements should always take precedence; and
- careful categorising and segregation of the waste to ensure that household waste is not mixed with the clinical waste – hospitals implementing effective waste segregation programmes can reduce clinical waste production by two thirds when compared with other hospitals.

7.42 Sustainable waste management in the NHS can be effectively split into three components:

- minimising waste arisings;
- effective waste segregation; and
- choice of waste disposal options.

Minimising waste arisings

7.43 Waste minimisation initiatives follow a well-established life-cycle as shown in Figure 4. This is based on the ETBPP guide, 'Profiting from practical waste minimisation'.

- Commitment – win support from senior management (by emphasising the potential cost savings) and encourage others to become involved through publicity. If possible select a champion who is credible at all levels in the organisation and is an enthusiastic supporter of the project.
- Assessment phase – undertake a thorough review of the types and sources of waste produced. Collect information on the quantities involved, and the costs (purchase, running and disposal) to demonstrate the real costs of waste generation to the site. Information can be sought from waste contractors, staff and through monitoring.
- Rank options – generate a waste data assessment table which identifies inputs and outputs for each activity and the cost of the wastes. Prioritise areas to

address by identifying areas where the biggest savings can be made.

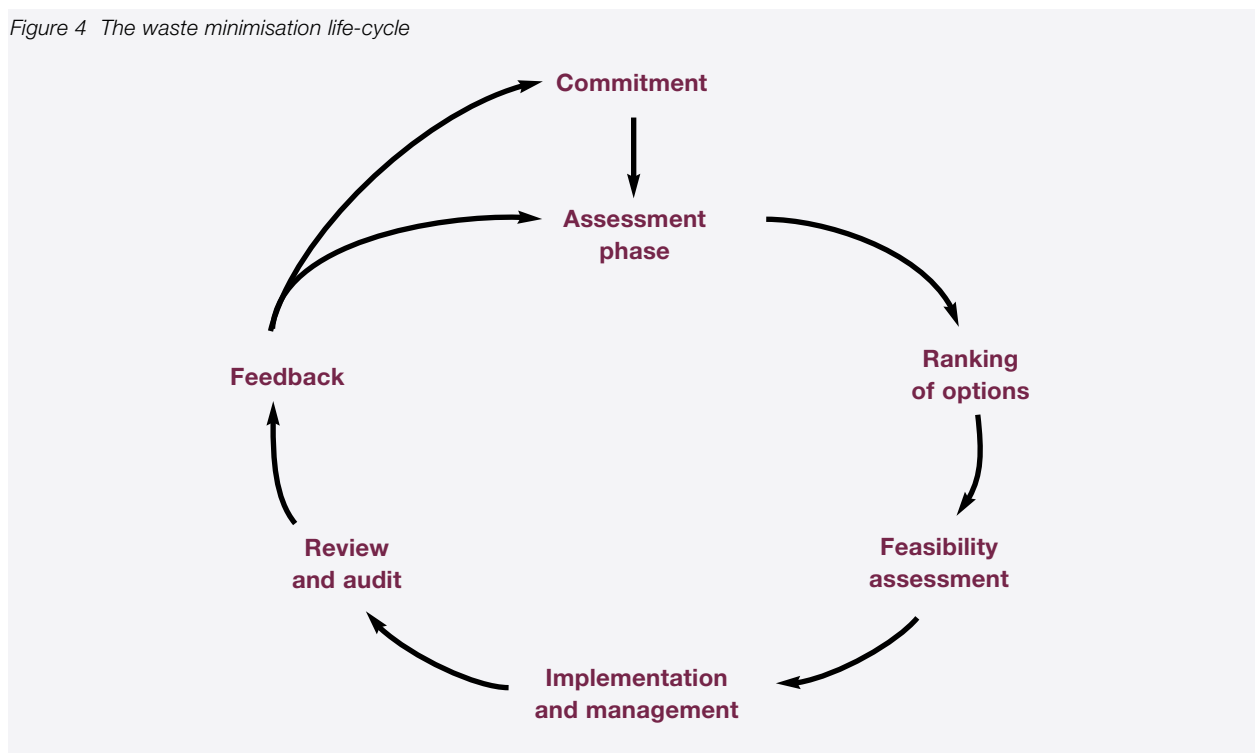
- Feasibility assessment – identify waste reduction opportunities, prepare a plan for improvement and set realistic waste reduction targets.
- Implementation and management – when tackling priority areas first consider each aspect of the activity, how it contributes to the achievement of the service objectives and whether less waste can be generated by removing or modifying particular aspects. Some examples of ways of minimising waste in the NHS are shown below (paragraphs 7.44 ff).
- Review and audit – review progress against targets and publicise results.
- Feedback – ensure that feedback is given on the achievements of the waste minimisation programme in order to maintain interest.

Examples of waste minimisation in the NHS

7.44 As mentioned previously, relatively few trusts have worked to reduce waste arisings at source, but have instead focused on efficient management of their waste arisings through segregation. The following actions are examples of efforts to reduce and recycle waste generated from NHS facilities. Some of these examples are considered further in the case studies at the end of this chapter:

- use of gas rather than coal as a fuel source can eliminate the need to dispose of coal ash to landfill

Figure 4 The waste minimisation life-cycle



(see case study: Bassetlaw District General Hospital ([paragraphs 7.113 ff](#)));

- removal of recyclables or re-usables from waste stream and selling them to dealers (see case study: Bassetlaw District General Hospital, where paper and metal are recycled). The economics of these initiatives depend to a large part on the price for recycled product. However, such a scheme should be at least revenue-neutral, given the associated reduction in waste disposal costs. Using on-site paper shredders enables even restricted paper to be sent for recycling;
- ensuring that all building contractor waste is removed by the contractor;
- composting garden waste rather than disposing of it through the general waste stream reduces the amount and cost of waste going for disposal;
- use of electronic media for dissemination of information can provide quick and easy access to information and reduce paper requirements;
- when purchasing, there is a need to consider opportunities for both recyclable and disposable products depending on specific needs. However, re-use can be expensive in terms of staff time, and if sterilization is necessary. Care needs to be taken that clinical hygiene standards are maintained. The use of nappies is one area where washable products may be used effectively and with low risk and cost (see [box on page 49](#)).

7.45 The ETBPP produces a large number of guides covering waste minimisation topics, including 'Finding hidden profit: 200 tips for reducing waste'.

Waste segregation

7.46 The accurate segregation of clinical and municipal waste is becoming an increasingly important way of reducing waste disposal costs. When hospitals incinerated their own waste, less attention was paid to differentiating waste streams, but now that this service is performed by a contractor and paid for, it is important that the two waste streams are kept separate to avoid:

- a. clinical waste being disposed of inappropriately – causing risk of human exposure or contamination; and
- b. municipal waste being disposed of as clinical waste – because disposal of municipal waste costs between £20 and £70 per tonne, while disposal of clinical waste costs between £180 and £320 per tonne.

7.47 Therefore, inaccurate waste segregation may cause a significant increase in health risk and waste disposal costs.

7.48 The Audit Commission survey, 'Getting Sorted', showed that there were huge differences in the amount of clinical waste generated per bed, in different hospitals. Levels ranged from nearly 1.2 tonnes per bed per year to under 0.25 tonnes in acute hospitals. Accurate waste segregation can, therefore, enable significant savings. A 500-bed hospital generating clinical waste at the higher end of this range and paying £50 and £250 for disposal of municipal and clinical waste respectively could expect to save around £40,000 per year by adopting good waste segregation practices.

Implementing waste segregation

7.49 A waste segregation initiative should be undertaken in much the same way as for waste minimisation. The emphasis should be on good housekeeping measures and raising staff awareness of the importance of differentiating between clinical and non-clinical wastes. Ensuring that packaging for products that will become clinical waste is not disposed of via the same route as the contents is one easy way to reduce the quantity of clinical waste generated. To ensure that waste segregation efforts do not adversely affect the smooth operation of the facility it is important that sufficient disposal facilities for both clinical and non-clinical wastes are conveniently placed within work areas.

7.50 Information posters or circulars could be used to inform staff, along with workshops and seminars. It is important that any such initiative is supported by commitment from senior staff (in speeches and in practice), and that regular monitoring is carried out to ensure that best practices are being followed. Waste segregation exercises can rapidly reduce the quantity of clinical waste generated and raise staff consciousness about waste issues, helping to ensure more sustainable use of resources (see case study: Preston Acute NHS Trust ([paragraphs 7.115 ff](#))).

Waste management

7.51 The management of the hospital wastes left over after effective minimisation and segregation activities

SHREDDED PAPER AWAITING COLLECTION FOR RECYCLING



Minimising nappy waste

The use of nappies and incontinence pads generates around 4% of all municipal waste, and represents a significant disposal cost for both hospitals and local authorities. Nappies contain a high proportion of plastics and do not biodegrade easily.

The National Association of Nappy Services co-ordinates a network of local enterprises, which provide re-usable nappies and incontinence pads to hospitals and the public. They supply clean nappies, and remove and launder used nappies, using large-scale laundry services which minimise the use of detergents.

The Lister Hospital in Stevenage began offering a nappy laundering service for new parents through its maternity department in 1999. It is estimated that this saves the hospital over £5000 per year in waste disposal charges (figure from 'Re-usable nappies get leg up from Waste Minimisation Act', Ends Report No. 291). Parents have to buy the nappies themselves, but the laundry service is subsidised by the County Council, the Groundwork Trust and the Hertfordshire Landfill Partnership.

Whilst using re-usable nappies in hospitals has environmental and financial benefits for the hospital, the real advantage is in demonstrating to parents that re-usable nappy services are a viable alternative to disposables. Re-usable nappies have now advanced to the stage where they have Velcro fastening and waterproof outer shells giving them functional equivalency with disposables. However, because of their current low market profile, few parents consider them as an option. A good illustration of this situation comes from a Women's Environmental Network study of two cities in North America. In Seattle 22 out of 24 hospitals use re-usable nappies and so do 70–80% of parents, while in Toronto only two out of 13 hospitals use re-usables and just 10–15% of parents. In the UK only 10% of parents use re-usables, and disposal costs the UK around £40 million per year.

Further information on the use of re-usable nappies can be obtained from the Women's Environmental Network and the National Association of Nappy Services.

encompasses, for clinical waste, the pre-treatment and disposal of the waste and, for other wastes, consideration of recycling and re-use prior to disposal. For more information on management of waste segregation, see HTM 2065, 'Healthcare waste management – segregation of waste streams in clinical areas' (NHS Estates, 1997).

Clinical waste management

7.52 Before disposal, clinical waste can be treated to reduce the risk of infection during handling and transport. Treatment can also enable lower-risk waste to be reclassified as non-clinical, thereby broadening, and

reducing the cost of, disposal options. Clinical waste pre-treatment methods involve:

- heat treatment;
- chemical treatment;
- irradiation; and
- encapsulation

or a combination of these methods.

7.53 The need for, or type of, pre-treatment depends on the composition and volume of the waste. On-site pre-

CARDBOARD IS COLLECTED FOR RECYCLING TO REDUCE LANDFILL WASTE



SEPARATION BINS FOR RECYCLING



treatment can be a risk-effective and economical way of beginning the clinical waste management process.

7.54 There are two methods for disposal of clinical waste (with or without pre-treatment) – incineration and landfill. Incineration at a clinical waste incinerator is suitable for all types of clinical waste, while municipal incinerators can be used for dealing with certain types of low-risk, non-infectious waste. Landfilling is only suitable for lower-risk wastes, or other wastes that have been incinerated or treated prior to disposal.

7.55 The ‘Waste Strategy 2000 for England and Wales’ (DETR) considers that incineration processes with energy recovery should be considered the best practical environmental option for clinical waste disposal. See also HTM 2075, ‘Clinical waste disposal/treatment technologies (alternatives to incineration)’ (NHS Estates, 1998).

Dealing with radioactive materials

7.56 The NHS, and UK healthcare more broadly, makes limited but important use of radioactive materials as part of patient care services. The applications may be classified as listed below:

- diagnostic applications in nuclear medicine. Here radioactive chemical ligands are attached to biologically active molecules, such as sugars, and given to the patient as an IV injection. The sugar is taken up by body organs, the brain in the case of glucose. The amounts of radioactivity used (commonly Technetium-99m) are small, and the half-life of the material typically short, but the practice is common and the isotope is generated from a long-lived parent material produced in a nuclear reactor;
- diagnostic uses in Positron Emission Tomography (PET). This technique is relatively new to the UK but likely to develop rapidly, initially with regional scanning centres and subsequently at a more local level. The primary use is in patient scanning to detect cancer spread. The radioisotopes, most commonly Fluorine-18, are produced by a cyclotron rather than a nuclear reactor. The availability of F-18 is currently poor and there is also a problem with sustainable supply of the most commonly used biochemical, Deoxyglucose (DG), which is difficult to synthesise;
- therapeutic uses in Brachytherapy. Here radioactive materials, usually in a solid or sealed/encapsulated form, are placed surgically into, or adjacent to, a tumour. The radioactivity generates ionising radiation, which is used to treat the tumour to induce reduction or tumour death. In contrast to the diagnostic techniques above, this is a high activity and dose technique;

- a range of other uses exist but these are either in decline, for example Cobalt 60 in radiotherapy, or the amounts used are sufficiently small as to be regarded as insignificant from a sustainability standpoint.

7.57 The production, storage, use and disposal of radioactive materials is controlled in law by the 1993 Radioactive Substances Act, which is the responsibility of the Environment Agency in terms of inspections and authorisations.

7.58 Sustainability is dependent on a continued supply of radioactive material from nuclear reactors and cyclotrons at an acceptable level of environmental impact. Equally the impact on the environment and public health of use and disposal in hospitals is tightly controlled and follows world standards frequently derived from the World Health Organisation (WHO) or International Commission for Radiation Protection (ICRP).

7.59 There are implications for the healthcare estate in terms of design features, which enhance radioactive containment and promote safe disposal. The siting of healthcare facilities may also be influenced by environmental considerations and/or availability of short-life radioactive materials which have to be transported by road under carefully controlled conditions. These are largely simple and undramatic considerations but they are important to public safety and environmental control.

Dealing with cytotoxic materials

7.60 These materials principally comprise a range of drugs used to treat cancer through a technique known as chemotherapy. The drugs are administered to the patient by IV, oral or interventional means. The intention is to induce cell death within the tumour whilst restricting the effect on normal body cells.

7.61 Pharmaceutical manufacturers supply the materials to appropriately registered healthcare institutions. The drugs are sterile if intended for IV use. The pharmaceutical laboratory within the hospital will generate individual patient doses using a purpose-designed, safe working environment, which will contain microbiological safety cabinets and facilities to restrict contamination as well as permitting easy cleaning or decontamination.

7.62 The materials are inherently poisonous and consequently pharmaceutical and environmental regulations control their manufacture, storage, use and disposal. The regulatory framework calls for secure storage to prevent loss or theft as well as the rigorous recording of the whereabouts and use of each batch or dose of material. Disposal routes must be approved by the Environment Agency. The loss of the drugs through

excretion from the patient's body is an important element in control.

7.63 Sustainable use of these cytotoxic materials depends on their continued manufacture and the minimisation of the environmental impact of the whole-life cycle of use including disposal.

Other wastes

7.64 Many of the non-clinical wastes generated in hospitals, health centres and primary care practices are in the form of packaging, such as cardboard, polystyrene and polyethylene. These wastes can be recycled effectively, reducing their environmental impact (both in use of raw materials, production and waste disposal). The new European Packaging and Packaging Waste Directives will also place responsibilities on manufacturers, wholesalers and distributors using large quantities of packaging to recover and recycle a percentage. This increases the importance of recycling non-clinical wastes in the future. Recycling can also be a good way of reducing waste disposal costs. For example, the recycling of non-clinical wastes at the Derriford Hospital in Plymouth has achieved savings of around £20,000 per year.¹

7.65 Disposal methods for non-clinical wastes will be determined by the range of available facilities in the area.

Management of waste contractors

7.66 The effective procurement and management of waste collection and disposal services is essential to ensuring that the environmental impacts of waste generated on-site are minimised. This issue is discussed further in [Chapter 8](#).

TRANSPORT

Introduction

7.67 Ease of access to sites is essential to ensure access to healthcare for the whole of society. However, access to sites by car in particular is unsustainable, and increasing road traffic causes:

- increased congestion, delays, unreliable journeys and road casualties;
- emission of pollutants, affecting local air quality and community health;
- emissions of carbon dioxide contributing to global warming;
- noise and negative visual impacts; and

- reduced levels of physical activity in the population related directly to a greater reliance on the car, and increased stress levels whilst driving, resulting in poorer health.

7.68 While emergency visits to hospitals are always likely to require private transport, good quality alternative modes of transport (other than the single occupancy car) must be made available for staff, patients and visitors. This is necessary to safeguard our health, the environment and to fight congestion and pollution.

7.69 Therefore, NHS facilities should implement practical initiatives aimed at minimising the impacts of transport on existing and new sites, bearing in mind the need to:

- consider the influence of location on accessibility and transport impacts;
- reduce the environmental impacts of people coming to NHS facilities, through promoting transport alternatives or car sharing for staff;
- reduce the need for patients, visitors and staff to travel between sites, possibly through the provision of a wider range of health and other services from one local facility central to its community; and
- increase the amount of information and advice available without the need to visit NHS facilities (that is, over-the-telephone or internet advice, such as the NHS Direct service).

7.70 These initiatives are in line with the Government's White Paper published in July 1998, 'A new deal for transport – better for everyone', driven partly by the Kyoto Climate Change targets for reducing emissions of greenhouse gases (see [paragraphs 2.8 ff](#)). A central theme of the new policy approach is the development of an integrated transport policy. This is also reflected in Planning Policy Guidance No. 13 (see [Chapter 5](#)). PPG 13 identified availability of parking, and provision of services for public transport, cyclists and pedestrians as key factors in determining the mode by which people access facilities.

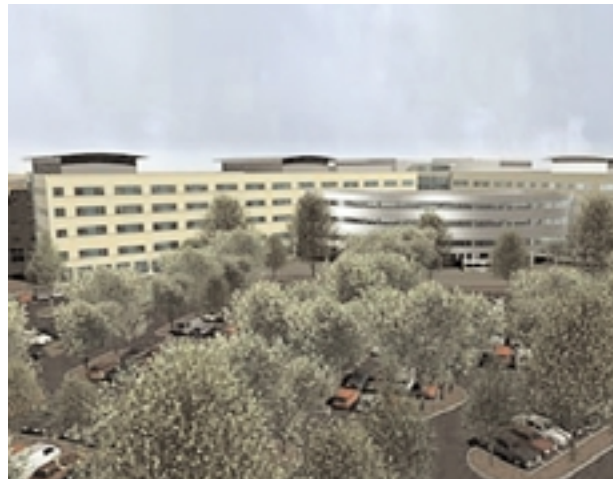
7.71 This chapter considers how NHS facilities can reduce their contribution to local transport problems by:

- the management of transport issues during the planning, design and construction of new-build or major refurbishment projects;
- green fleet management issues such as selection of alternative fuel vehicles, use of low-emission fuels and fuel efficiency measures; and
- green transport and travel action plans ("green travel plans") addressing staff, patient and visitor arrangements for getting to existing operational sites.

¹ This level will increase significantly as waste disposal costs rise in response to the landfill tax.



THE NEW PRINCESS MARGARET HOSPITAL, SWINDON: CAD IMAGES OF HOSPITAL POST-REFURBISHMENT BY IMPACT INTERACTIVE, PROVIDED COURTESY CARILLION PLC



7.72 Transport issues associated with estate strategy planning, design and construction and Green Transport Fleets are considered in [paragraphs 4.5–4.13, 5.12–5.13, 6.6](#) and [8.45–8.46](#) respectively. Travel plans are considered below.

Green travel plans

7.73 Over the past two years, Central Government has promoted the implementation of the 'Green Travel Plan', which should identify and manage the environmental impacts associated with the travel and transport arrangements for a particular site, helping especially to cut down on car use. Local authorities, businesses, community organisations, schools and hospitals are being encouraged to produce their own travel plans. These are linked to a major national awareness campaign and measures to help individuals, families and communities to consider their own travel habits.

Economic incentives

7.74 In the 1999 and 2000 Budgets, there were a number of incentives to encourage employers to establish green transport plans, with the aim of getting employees to leave their cars at home.

7.75 From 6 April 1999 there has been no tax applied to certain green commuting benefits provided by employers, including:

- employee works buses with 17 or more seats;
- subsidies to public bus services used by employees for travel to work (providing the fare is the same as for a member of the public); and
- bicycles and cycling safety equipment provided to employees for getting to work.

7.76 Also, employers were able to pay employees up to 12p per mile travelled on their bicycle for business purposes. If no payment is made by employers then employees can claim tax relief of 12p per business mile.

7.77 In order to promote car sharing, employers can pay tax free for taxis home in the event of car sharers needing to go home separately.

Local transport plans

7.78 Local authorities have a responsibility to prepare local transport plans, which set out how they will gain the support for adoption of travel plans by major employers within their area. Local authorities also have to monitor traffic levels on roads and set targets for reductions and achieve the target to meet local air quality objectives (set under the Environment Act 1995) by 2005.

The benefits of implementing travel plans

7.79 A travel plan can bring the following benefits to NHS staff, the local community and the environment:

- the organisation can benefit from having a healthier, more motivated workforce, reduced congestion, reduced demand for car parking and improved access for employees, patients, visitors and deliveries;
- staff can benefit from improved health, savings in time and travel costs, reduced stress and a general improvement in quality of life;
- the local community can enjoy reduced congestion, reduced journey times, improved public transport services and reduced overspill parking in residential areas;
- the environment, and hence local communities, will benefit from improved air quality, less noise, dirt and the reduced contribution to other national and global environmental problems such as global warming.

Developing and implementing a travel plan

7.80 Implementing a green travel plan can be summarised in five steps:

- step 1: allocating roles and responsibilities;
- step 2: understanding current travel patterns;
- step 3: setting objectives, targets and indicators;
- step 4: identifying measures; and
- step 5: awareness raising and marketing.

7.81 The NGO (non-governmental organisation) Transport 2000 has produced 'The healthy transport toolkit: a guide to reducing car trips to NHS facilities', which provides further information on setting up a green travel plan in the NHS, including examples of best practice.

Step 1: Allocating roles and responsibilities

7.82 To be successful, a travel plan should involve everyone at the facility, from senior clinicians and management through to the lower grades of staff. In order to ensure that travel plan implementation is co-ordinated effectively, the day-to-day running of the travel plan should be the responsibility of one key person, the Travel Plan Co-ordinator, who will need:

- support of senior management – genuine, committed, practical support, leading by example and securing necessary funding;

- a steering group (to oversee the development of the travel plan and provide guidance and high-level support) and working groups (to provide the means for enabling employee participation, and regular liaison with staff). There will be a significant role for hospital union representation on the steering group;
- staff time – to undertake various aspects of the plan, for example: time for staff consultation; time for development and analysis of a staff travel survey; and time for implementation of various identified actions; and
- dialogue with other parties – especially local authorities, public transport operators, suppliers to sites, patients and visitors.

Step 2: Understanding current travel patterns

7.83 In order to develop a travel plan it is important to gain an understanding of the existing transport links/facilities serving a site, and the amount of travel generated by a particular site. This involves:

- a site assessment – providing an overview of the transport links serving the site and the on-site facilities available (for example cycle parking, car parking, bus stops);
- a survey of staff travel to work, considering travel patterns and staff attitudes; and
- audits of other travel and transport requirements – especially those associated with staff, suppliers and deliveries, and including fleet vehicle arrangements.

Step 3: Setting objectives, targets and indicators

7.84 To give focus to the travel plan it is useful to identify the principal objectives that the plan will address; to identify specific targets which the facility can aim for over the short and longer term and to develop indicators which measure progress toward meeting these targets. [Chapter 13](#) provides further information on developing indicators and targets.

7.85 The objectives, targets and indicators that are set for the travel plan can be incorporated into the objectives and targets set as part of a facility's EMS.

Step 4: Identifying measures

7.86 The key to a successful travel plan is to identify which transport alternatives staff and visitors will be prepared and able to use. These alternatives should be made more attractive than driving alone. Experience suggests that it is necessary to have a mixture of incentives and disincentives, so that there are several options available. The following measures could be adopted to address different transport issues:

- walking – the scope for encouraging people to walk to a site will depend greatly on the location and type of site. It is best suited to journeys under two miles, and therefore should be targeted at those who live and work within a two-mile radius of a site. There may be a need to improve pedestrian networks to and from, or on, sites – for example lighting, paving and pedestrian crossings;
- cycling – people living within five miles of a site are potential cycle commuters, which can be determined by the staff travel survey. Incentives to cycle include:
 - provision of safe, secure and covered cycle parking; lockers, showers, changing and drying facilities;
 - interest-free bicycle loans, arranged discounts with local suppliers for bicycle purchases;
 - safe cyclist routes on and around the site.

A bicycle user group (BUG) should be set up to help promote and discuss cyclist issues.

- public transport – staff and visitors need to know what public transport facilities are available to them. The following steps can be taken:
 - provision and access to public transport information can encourage people to use public transport. Promotion of the links to public transport is essential to ensure a high level of awareness in visitors and patients;
 - financial incentives such as interest-free loans or discounted travel passes/season tickets may possibly be negotiated with the local service providers;
 - the organisation will need to work in partnership with the local authorities and local public transport operators to influence the routes and times of public transport. For example, through community liaison and the local authorities it may be possible to influence the local bus operators to operate more flexible/different services and low-emission buses. Issues related to access to public transport for disabled patients and visitors should also be addressed this way;
- car sharing – encouragement is required to reduce the number of single occupant car journeys. Methods include:
 - setting up a car-sharing database based on the results of the staff travel survey;
 - discouraging car travel by reducing parking spaces for staff, offering incentives, or changing eligibility;

- business and fleet travel – the environmental performance of an organisation can be improved by reducing business mileage through:
 - reducing the need to travel by adopting alternative working practices, such as teleworking, videoconferencing and flexitime;
 - employing better travel planning, for example by planning meetings based on travel arrangements or public transport times;
 - reviewing business mileage rates to ensure there is no incentive to travel more car miles than necessary;
 - purchasing cleaner and more efficient fleet vehicles (for example gas-fuelled ambulances, see [paragraphs 8.45–8.46](#)) and training staff to drive vehicles in a safe and energy-efficient manner;
- deliveries to sites – measures to reduce the number of deliveries to sites should be considered as part of the Trust's Supplies Strategy (as required by HSC 1999/143, 'Review of NHS Procurement'). These may include rationalisation of products and suppliers, re-configuration of delivery points, reduction in the number of ordering points, optimised order quantities and maximised use of consolidated deliveries (for example, the NHS Logistics Authority delivers a wide-range of supplies, in ward-level orders, from regional distribution centres and depots).

Step 5 Awareness raising and marketing

7.87 In order to have a successful travel plan it is necessary to win hearts and minds and to sell the benefits to staff and publicise the alternatives available to the public. It will be necessary to formulate a clear marketing campaign and produce publicity material. Communication techniques include the use of intranet pages, in-house staff newsletters, poster campaigns and any existing team briefing mechanisms.

7.88 It is suggested that Green Travel and Transport initiatives are promoted in tandem with any other environmental management initiatives, such as EMS implementation.

7.89 At all levels of care, benefits will be derived from liaison with other stakeholders, such as:

- local authorities, who will have developed local transport plans for the next five years as a result of the Government White Paper, 'A New Deal for Transport'. New local transport plans are developed in consultation with local people, and will provide integrated transport strategies for local needs and set local targets, for example for improving air quality, road safety, public transport and road traffic

reduction. They will bring more certainty of funding and encourage greater use of traffic management by local authorities. There will be new powers for local authorities including road user charging and levies on parking to tackle traffic jams and traffic growth, and also new sources of funding for local transport;

- service providers, such as local bus and rail operators, in order to improve public transport links to the facility;
- local communities, patients and visitors, to ensure that their concerns and needs are addressed; and
- vehicle manufacturers and fuel suppliers, in order to establish how the implementation of “greening the transport fleet” actions might be achieved.

Approaching green travel plans in facilities of different sizes

7.90 The cost-effectiveness of developing green travel initiatives will vary according to the size of the facility, as follows.

“Acute” (large) facilities

7.91 Consider implementation of a strategic, long-term travel or transport policy, covering all aspects discussed under Step 4 above.

7.92 Carry out a detailed staff, patient and visitor travel survey, site assessments and audits of travel/transport (fleet) arrangements (information on undertaking staff assessments can be found on the DETR’s Greening Government Operations site at <http://www.environment.detr.gov.uk/greening/gghome.htm>). Publicise public transport routes and times.

7.93 Draw up and implement a travel plan in the form of a programme of action, based on the analysis of the staff travel survey and site-based factors in order to implement the travel policy.

Intermediate (medium) facilities

7.94 Consider carrying out a staff travel survey to allow drafting and implementation of a travel plan for site staff only. Publicise public transport routes and times.

Primary care (small) facilities

7.95 A programme of promotional actions could be drawn up by smaller sites, for example:

- encouraging staff and patients to travel by public transport or by bicycle by promoting the health benefits; and
- publicising public transport routes and times (for example those to and from GP clinics).

CASE STUDIES

Energy management

The Willows Residential Care Home, Anchor Trust, Rotherham

7.96 The Willows Residential Care Home was completed in 1992. It uses a range of energy-efficient technologies and a building energy management system (BEMS) to reduce its energy use.

7.97 Bulk space heating is provided by a high-efficiency condensing boiler, but hot water is generated separately so that main boilers only need to operate when space heating is required. It is estimated that the payback period for the condensing boiler over a traditional boiler is around two years.

7.98 The main lounge is located to the south of the building with large windows. This maximises solar gain in this area and is also beneficial for patient wellbeing.

7.99 The BEMS works by:

- adjusting internal heating depending on the outside temperature;
- controlling the times for which the boiler is on; and
- maintaining space and hot water temperatures at the required level.

7.100 The management systems are operated remotely by a specialist contractor, to ensure that optimum performance is achieved. The capital cost of the BEMS was around £5000 and it is estimated that the payback period is around five years.

For more information on sustainability at The Willows Residential Care Home, contact Anchor Trust on 01709 838639.

Diana Princess of Wales Hospital, Grimsby

7.101 Diana Princess of Wales Hospital used to purchase electricity from the regional electricity company and raise its own hot water for domestic purposes and heating using on-site boilers. In 1994 a CHP unit was purchased with financial assistance from the Government.¹ The unit now saves the hospital approximately £110,000 each year

¹ Capital allowances for CHP proposals are still available but are rarely awarded to hospitals because it is felt that in most cases the financial case is sufficiently strong without the need for Government assistance.

7.102 A Government CHP programme supported an application from Diana Princess of Wales Hospital for financial assistance to install a CHP scheme in 1994. In addition to the installation of the CHP scheme, the project also included the re-designing of the existing boilers to meet the heat demands more efficiently.

7.103 The CHP scheme at Diana Princess of Wales was commissioned in May 1995 and comprises a gas-fired turbo-generator that produces 680 kW of electrical power, feeding hot exhaust gases into a heat recovery steam generator (HRSG). A dual-fired 5,000 kg hr⁻¹ combination steam boiler takes the exhaust gas for heat recovery. The dual fire capability allows extra heat to be added to the boiler if the exhaust gases are not hot enough. The size of one of the existing boilers was reduced by 50% and used as the HRSG. This eliminated the need to buy a new HRSG.

7.104 The demand for heat and hot water changes over the course of a year and the new system now allows the size of the operating boiler to be matched to the demand. For example, only the small boiler runs in the summer months.

7.105 The generated electricity from the scheme provides around 75% of the hospital's total electricity requirement and additional electricity is bought in from an electricity supplier. On average 90% of the heat and hot water required is supplied by the CHP scheme.

7.106 The investment cost for the scheme was £440,000. The hospital signed a ten-year contract to maintain both the scheme and associated plant and keep the availability of the system as high as possible.

7.107 The CHP scheme is currently being linked more closely with the hospital's building energy management system (BEMS) in order to make even more efficient use of the heat and electricity.

7.108 The energy team at the hospital is currently investigating a new scheme that will utilise waste heat from the CHP scheme in an air-conditioning unit for one of the new wings. The process would involve the use of the heat in a vapour absorption refrigeration system for air-conditioning.

7.109 The scheme has proved to be very successful, with the actual savings being higher than originally anticipated. The payback is four years, through annual savings of around £110,000. The scheme has also helped the hospital reduce its CO₂ emissions by around 9500 tonnes each year.

7.110 Diana Princess of Wales Hospital is now introducing a new charging system. Under this system, each hospital wing will be charged for the heat it uses (and, in time, the air-conditioning it uses). This will be achieved via the installation of heat and chiller meters

that will allow the energy managers to account for the heat distribution around the site. The meters will also assist in monitoring and targeting the energy use on the site, since sudden fluctuations in heat requirements will easily be identified and rectified.

7.111 Installation of a CHP plant at Diana Princess of Wales Hospital has paid for itself in just four years. The hospital now benefits from a secure base-load electricity supply and a heat supply for domestic hot water, heating and refrigeration in the future. The CHP plant is reliable and is backed by the ten-year maintenance contract with the supplier.

For more information on sustainability at Diana Princess of Wales Hospital, contact the Director of Estates and Facilities, Northern Lincolnshire and Goole Hospitals NHS Trust, on 01902 422431.

Waste management

7.112 The following case studies illustrate the potential advantages of effective waste management. These studies are summaries of those reported in the NHS Estates publication 'Healthcare waste minimisation: a compendium of good practice'. This publication provides additional information on these and several other case studies.

Bassetlaw District General Hospital

7.113 The programme of waste minimisation at this site was instigated by the Trust Chief Executive, giving high-level support to the initiative. The benefits achieved through waste minimisation included:

- a 31% reduction in general waste disposed of to landfill (from 340 tonnes to 235 tonnes per year);
- a 40% reduction in general waste disposal costs; and
- recycling of between 18 and 20 tonnes of paper each year.

7.114 These benefits were achieved through:

- changing the site's fuel supply system from coal to gas (an activity that accounted for 25% of the reduction in waste sent to landfill, but was not part of the waste minimisation programme);
- rationalising the number of waste disposal skips and locating them in areas that would reduce the amount of fly tipping (the site had previously had problems with members of the public disposing of waste in NHS skips);
- efforts to remove office paper from the waste stream and collect it for recycling. Between 18 and 20 tonnes of paper are recycled every year. The scheme is revenue-neutral;

- garden waste being composted on-site;
- all site contractors being required to remove all their waste from the site; and
- scrap metal being collected for recycling.

For more information on sustainability at Bassetlaw District Hospital, contact the Director of Support Services, Bassetlaw Hospital and Community Services NHS Trust on 01909 500990.

Preston Acute NHS Trust

7.115 The initiation of a waste segregation and minimisation scheme by this Trust resulted in a 35% reduction in clinical waste arisings with resulting cost savings of around £55,000 per year. A dedicated waste minimisation officer was employed, the post being funded through the savings achieved. The scheme has been so successful that the Trust is now sharing its experiences with other hospitals in the UK and overseas, and is considering offering waste management consultancy services.

7.116 The presence of a dedicated Waste Minimisation Officer is felt to be instrumental in the Trust achieving the large of cost savings from the programme. The postholder is responsible for:

- providing training to clinical, nursing and support staff;
- reducing the overall amount of waste produced;
- meeting minimisation targets and working with packaging and equipment manufacturers to reduce waste arisings;
- establishing minimisation, re-use and recycling programmes; and
- managing the waste process from generation to disposal.

7.117 In addition to raising awareness of the importance of waste segregation and minimisation, recycling schemes have been initiated for newspapers, printer cartridges, plastic, glass, office paper and cardboard. These schemes have reduced landfill disposal costs for general waste (in addition to the £55,000 savings on clinical waste). However, their viability is dependent on the recycling market and if the costs of collection were to increase they may no longer be economical.

For more information on sustainable development initiatives at Preston Acute NHS Trust, contact the Trust's Waste Minimisation Officer on 01772 710208.

University College London Hospitals NHS Trust

7.118 Waste management initiatives by this Trust resulted in estimated annual savings of approximately £40,000 through a 25% reduction in clinical waste disposal, and recycling of cardboard, cans, paper and glass.

7.119 Benefits from the scheme were realised very quickly with the 25% saving in clinical waste disposal being achieved within three months of the scheme's initiation. Results were achieved through raising staff awareness and training in the correct use of clinical waste bags, using videos, articles, posters and the Trust newsletter. In addition, the number of clinical waste bags was rationalised and they were located in sluice rooms to improve their appropriate use.

7.120 The involvement and support of infection control staff in addition to support services staff was felt to be important in lending weight to the initiative. The use of the cost savings to pay for improvements to the estate (through redecorating and refurbishment) helped staff to identify tangible benefits from their actions.

For more information on sustainable development initiatives at University College London Hospital, contact the Trust's Waste Officer on 020 7387 9300.

Transport

Stepping Hill Hospital, Stockport

7.121 The hospital has negotiated with local train and bus operators to secure a discount (approximately 5%) on employee travel cards. This may be further subsidised by the hospital to give a 20% to 30% discount. This scheme will be funded by car parking revenue.

7.122 Staff are encouraged to cycle to work and are able to hire bicycles at 50p per week for two years, after which they have the option to purchase the cycle at discounted price.

7.123 A car-sharing database has been set up to improve the occupancy levels of staff vehicles. The scheme includes a free taxi ride home if an employee must return home in an emergency or in the event of sickness. Car sharers park free of charge, while other staff and visitors pay to park. Revenues will cover the costs of the car-share database and the emergency ride home facility.

For more information on sustainability at Stepping Hill Hospital, contact the Director of Estates on 0161 483 1010. Further examples of good practice in transport management in hospitals can be found in 'The healthy transport toolkit: a guide to reducing car trips to NHS facilities' (Transport 2000).

Queen's Medical Centre (QMC), Nottingham University Hospital NHS Trust

7.124 The University Hospital NHS Trust, Nottingham, employs in excess of 6500 staff and currently has 1900 staff car parking spaces on-site. In addition to this there are 720 spaces reserved for patients and visitors. It is estimated that approximately 10,000 people pass through the Medical Centre doors every day.

7.125 The QMC Green Commuter Planning Group was formed in early 1996. This Group consists of both staff and management representatives working together along with members of external organisations such as the local bus companies and the city council. After consultation it was agreed that the initial task of the Group should be to undertake a staff "Journey to Work" survey of all 6500 employees on-site. The survey proved a huge asset and in February 1998 the Trust Green Commuter Plan was launched, with a commitment to reduce daily traffic to the site by 450 vehicles by the Spring of 2001.

7.126 From the survey results it was determined that efforts for improvement would be centred on three main alternative modes – cycling, public transport and car sharing. In February 2000 a full-time Staff Travel Co-ordinator was appointed to implement the plan.

7.127 Permits to park at the QMC have, for the last five years, been very stringently controlled. They are issued against strict criteria, and only to members of staff who have a need to bring their cars to work (that is, staff who need their cars to carry out their duties, staff who have personal circumstances or staff who work unsociable hours when security may be a problem).

7.128 The benefits from the success of the Trust Commuter Plan are wide ranging. For the Trust itself, the alleviation of some of the car parking problems it encountered helps with the smooth operation of the hospital. For the entire community, the benefits are a reduction in traffic congestion, improvements to general health and the environment, and a decrease in traffic accidents.

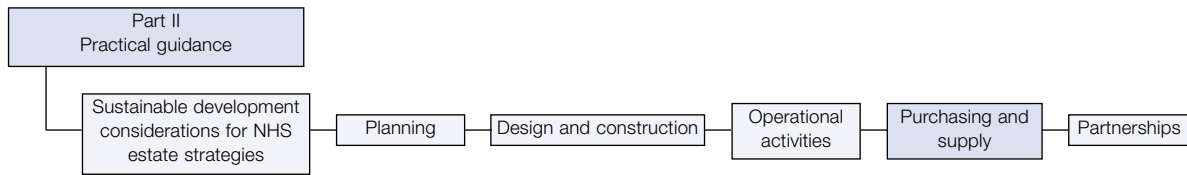
For more information on sustainability at QMC, contact the Staff Travel Co-ordinator, Nottingham University Hospital NHS Trust, on 0115 924 9924.

Down Lisburn HSS Trust

7.129 The Lagan Valley site investigated the feasibility of car sharing and increased use of public transport, but this was not feasible because of the wide catchment area. Instead, efforts have focused on greening the 60 vehicle transport fleet by working with Phoenix Gas, the local gas provider. The intention is to have an LPG-fuelling facility on-site for the fleet.

For more information on sustainability at Lagan Valley, contact the Environmental Officer on 028 9266 5141.

8 Purchasing and supply



INTRODUCTION

8.1 This chapter provides an overview of the steps that NHS facilities can take, in order to improve the contribution that their purchasing and supply (and contract management) choices make to sustainable development. Aspects considered are:

- developments in NHS purchasing and supply;
- restrictions on sustainable purchasing and supply in the public sector;
- incorporating sustainable development in purchasing;
- contractor performance management; and
- incorporating sustainable development criteria into the purchase of specific products or services.

DEVELOPMENTS IN NHS PURCHASING AND SUPPLY

8.2 The recent NHS Procurement Review resulted in a move towards re-centralising and strengthening procurement processes within the NHS in the form of the NHS Purchasing and Supply Agency. The three areas of opportunity identified by the review were:

- working in partnership (public/private initiatives);
- organisational change (the increasing integration of social and healthcare services will provide more opportunities for joint approaches to purchasing and supply); and
- instituting best practice (which could include the consideration of environmental, community and other sustainability factors in the purchasing and supply process).

8.3 The removal of the “internal market” has allowed better sharing of information and services and also more co-ordinated product purchasing. The Government’s Comprehensive Spending Review, which set targets for efficiency gains in Central Government procurement, is also a powerful driver for increasing purchasing efficiency in Government departments. This includes making electronic procurement everyday practice within three years.

SUSTAINABLE PURCHASING AND SUPPLY IN THE PUBLIC SECTOR

8.4 Both UK Government policy and European procurement directives, and also the Treaty of Rome, limit the extent to which NHS purchasing can incorporate environmental and social considerations (in addition to traditional economic considerations). The DETR and Treasury Note ‘Environmental issues in purchasing’ provides a useful review of the opportunities and constraints of sustainable purchasing in the public sector. The main points raised in this note are summarised below, while the full text is included in [Chapter 13](#).

Government procurement policy

8.5 All Government procurement should be carried out on the basis of value for money (vfm); this is defined as the optimum combination of whole-life cost and quality to meet the customer’s requirement (see also ‘Environmental issues in purchasing’, HM Treasury and DETR). Government departments also have a responsibility to improve the environmental performance of their operations, through the commitments of the 1990 White Paper ‘This Common Inheritance’ and the Greening Government initiative. Including environmental criteria in purchasing specifications can make an important contribution to the achievement of Government targets. However, the aim must always be to achieve vfm rather than to further other policy aims.

8.6 A major challenge of effective public purchasing is therefore to ensure that both vfm and responsible purchasing criteria are met.

European procurement requirements

8.7 UK public sector organisations are required to adhere to the European Commission Procurement Directives (implemented in the UK by the Public Procurement Regulations) for all contracts over certain thresholds (contact HM Treasury for up-to-date figures). For contracts over these values it is necessary to advertise the contract in the ‘Supplement to the Official Journal of the European Communities’ and tender them competitively.

8.8 European Procurement Directives permit information to be requested of potential suppliers only so far as it relates to their technical or financial capacity to undertake the work. Information on other issues, such as suppliers' general environmental policies, is not permitted. Contracts may only be awarded on the basis of the most economically advantageous offer or lowest price, other criteria outside the specification for the product or service may not be used to influence the decision.

8.9 The Treaty of Rome also places restrictions on the ways in which public bodies can set the specifications for contracts. Most importantly, it requires specifications to be drawn up in such a manner that they do not discriminate against products or suppliers from other Member States.

INCORPORATING SUSTAINABLE DEVELOPMENT CRITERIA IN PURCHASING

8.10 Despite the restrictions imposed by UK and European procurement policy and legislation it is possible to incorporate the aims of sustainable development into purchasing activities. This can be achieved by developing formal policies on the procurement of certain types of products, which can be incorporated into contract specifications and (through consideration of whole-life costs) in making procurement decisions. Some ways in which sustainable development criteria can be adopted at different stages of the purchasing process are considered below.

8.11 The purchasing process comprises four stages:

- a. preparation of specifications;
- b. selection of firms to invite to tender, based on an open request for expressions of interest;
- c. award of contract; and
- d. contract conditions and management.

Preparation of specifications

8.12 Purchasers are free to expect environmental or other requirements in their specifications. For example, it may be policy within an organisation not to release substances that deplete the ozone (see case study on refrigeration (paragraphs 8.49 ff)), or that all paper must have a certain proportion of content from recycled sources. These sorts of requirements could be included within the contract specification and then the best-value supplier of the specified product or service selected. What would not be permitted would be to specify a product generally (for example a certain size and grade of paper) and then to choose a more expensive product on the basis of its environmental performance.

8.14 For certain product types, eco- or energy-labelling schemes are in place which identify products which have improved environmental performance. These labelling schemes are not able to indicate definite improved performances for labelled products compared to non-labelled products, so the use of labels in setting specifications is not advocated by the Government. However, the criteria used to develop the labels may be suitable for improving the environmental awareness of product specifications.

Selection of firms to invite to tender

8.15 Firms are required to submit a great deal of information on their financial standing, technical capacity and ability to undertake a specified contract. As a result, they may not be asked to provide information on other issues.

8.16 It is possible to ask about environmental performance where this is directly relevant to the product or service being purchased. For example, for an on-site service contract it is acceptable to ask whether a company would be able to comply with the requirements of the NHS trust's environmental policy and to demonstrate that it has this capacity through other projects that it has worked on.

Award of contract

8.17 Because contracts can only be awarded on the basis of vfm it is important that the value and costs associated with a product or service are assessed thoroughly. The use of a whole-life costing approach will favour those products which are more efficient and easier to re-use or recycle, and these may therefore represent better value than those that have low purchase prices. Lower whole-life costs may indicate more sustainable products, because in general lower running costs and disposal costs suggest less energy intensity and the use of more environmentally benign substances. However, where market failures exist, and environmentally damaging aspects are not reflected in prices, this may not be the case.

8.18 Factors to consider when assessing the whole-life vfm include:

- running costs;
- indirect costs (for example, less efficient equipment will increase the heating load in a building resulting in additional cooling costs);
- administrative costs;
- disposal costs (influenced by recyclability and waste disposal category); and
- future replacement costs (products with a longer life expectancy will require less expenditure on

replacement; also, products that are able to meet more stringent future legislation may prove better value because their life expectancy will not be so easily reduced by changing legislation).

Contract conditions

8.19 The extent to which contract conditions can be imposed that influence the ways in which a service is provided or a product manufactured is limited by Government policy which states that procurement should not be used to further other policy objectives. As a result, it is not possible to request contractual conditions that do not relate to the supplier's ability to carry out the contract. However, where the contract may directly influence the NHS organisation's ability to meet policy objectives it is possible to request that work be carried out in accordance with site policies in the specification.

CONTRACTOR MANAGEMENT

8.20 Although the extent to which a public sector purchaser can influence the off-site activities of its contractor is limited, its on-site activities can be monitored and managed to ensure that the contractor does not contravene site policy or present risks to health or the environment. The NHS facility also has a responsibility, under Duty of Care, to ensure that the off-site activities of waste management contractors are appropriate to the types of waste they are handling.

8.21 Contractor management should ensure that their performance on-site is such that they are complying with legislation and any site policies to which they are obliged. Aspects to consider should include:

- appropriate storage of any hazardous chemicals used (for example flammables and fuels); and
- appropriate storage and disposal of wastes generated (including legal documentation requirements).

8.22 Substance storage should be carried out according to environmental best practice and local (or UK) regulations as a minimum.

8.23 The frequency of monitoring (best done via unannounced, brief spot-checks) will obviously depend on the size and duration of the project being carried out. For large projects, for example new builds, it is best practice to set up a risk management plan that identifies the activities during all phases of construction which represent risks to:

- a. health and safety (of site personnel and the wider community); and
- b. the environment.

8.24 This would include noise and dust emissions and waste generation, storage and disposal (including removal of any contaminated soil). This plan (or similar arrangements) may be a condition under the planning permission for a new build or a major refurbishment project.

8.25 These types of requirements could be incorporated into all new, relevant contracts and consideration given to modifying existing contracts (following discussion with the contractor) when they are due for renewal.

SPECIFIC PRODUCTS OR SERVICES

8.26 An estate strategy should incorporate sustainable development at every stage. This has the following implications for purchasing and supply:

Property portfolio expansion (Chapter 5)

8.27 When selecting buildings, or sites for new builds, to add to the property portfolio, a full environmental (and health and safety if appropriate) due diligence audit should be carried out on the existing property/site, in order to identify potential liabilities associated with the purchase. This should establish whether the site is – or was formerly – occupied by potentially contaminative industries (such as a printing works) or activities (such as fuel storage in underground tanks). Where contamination may exist due to past activities, a limited soil and groundwater investigation should be carried out to confirm its presence and, if necessary, a more extensive investigation should be conducted to assess the extent, nature and level of contamination. The next stage is to establish and cost an appropriate remediation strategy so that this can be taken into account in the site purchase price and in consideration of the vfm offered by different locations.

8.28 From a sustainability perspective, the best practice is to select brownfield, as opposed to greenfield, sites for new developments. However, the above precautions should be applied.

Selection of existing facilities for lease/ownership (Chapter 5)

8.29 When selecting existing properties to lease or own, a set of environmental criteria could also be considered, based on BREEAM guidelines, including the following:

- existence of energy efficiency and water conservation measures;
- age and efficiency of current heating/cooling systems (energy costs);
- meterage of energy and water;
- storage space for wastes to be recycled; and

- quality of natural light and ventilation.

8.30 These could be used to make selections between leased buildings (if there is a choice available). The potential cost savings and increased performance of buildings which perform well against the above criteria are discussed in [Chapter 6](#).

8.31 For leased, multi-occupant properties, discussions with the landlord and other occupants could be entered into (to gauge interest and commitment) regarding:

- setting up recycling facilities for all/selected occupants of the building;
- the potential for sub-metering (and charging for actual usage) so that occupants have an incentive to reduce energy and water costs; and
- the installation of simple energy efficiency and water conservation measures.

Design and construction ([Chapter 6](#))

8.32 A commitment to incorporating environmental factors at the design stage (energy-efficiency and water-conservation measures, purpose-built waste storage facilities etc) obviously has procurement implications and procurement staff, therefore, need to be provided with an awareness of the issues in order to procure the most appropriate equipment. For example, BREEAM could be employed to ascertain whether the design is truly environmentally sustainable. The monitoring of performance of contractors during construction is discussed earlier in this chapter. NHS Estates is currently working with the Building Research Establishment to develop an Environmental Assessment Tool (NEAT) for considering new hospital design and construction. This will be available in September 2001.

8.33 The Government Construction Clients' Panel has recently released a report entitled 'Achieving sustainability in construction procurement'. This sets out a range of specific objectives for including sustainability criteria in the procurement of Government buildings between 2001 and 2003.

Operational activities ([Chapter 7](#))

Energy supply

8.34 When selecting an energy supplier, sourcing a proportion of this energy from renewable sources is an option that has to be considered. At present, this may not represent the best vfm and would need to be a policy decision. See case study: NHS Purchasing and Supply Agency, for information on how renewable energy was purchased for their properties.

8.35 In the future, the climate change levy and technological developments may result in renewable

energy becoming more economically viable and the vfm argument for purchasing renewable energy will become stronger.

Paper

8.36 Recycled paper can now be produced to a quality that is visually indistinguishable from virgin paper, and no longer causes problems in printers and photocopiers. A trial could be carried out to confirm this and consideration given to using recycled paper for the majority of internal uses.

8.37 Consideration could be given to specifying fully or partly recycled paper – or as a minimum, paper from sustainable sources – for all publications and promotional leaflets produced by the facility, and this could be declared on the publications themselves.

8.38 Again, although a recycled paper product may prove to be the best vfm, the only way to ensure that a recycled product could be purchased would be to specify that the contract is for the supply of recycled paper. While this is permitted according to the joint HM Treasury and DETR note, unless paper consumption is commensurately reduced this may increase the trust's paper costs and should therefore only be considered in the context of Government or NHS policy.

8.39 In the near future it is likely that Government policy will make the specification of recycled paper for photocopiers mandatory for the public sector, if a pilot exercise proves successful. This could well be followed by a requirement to specify recycled paper for other uses.

8.40 Should it be decided that paper use is an area where the trust would like to make a policy commitment to more environmentally friendly products (in advance of a mandatory requirement from Central Government), it would be good practice to specify that paper:

- comes from "sustainable forests" and is either "totally chlorine-free" (TCF) or "elemental chlorine free" (ECF – low chlorine content);
- is manufactured using non-chlorine bleaching agents such as oxygen, hydrogen and sodium peroxide, soap, or more efficient pulping techniques; and
- contains at least 80% of post-consumer waste.

Waste

8.41 Careful selection of waste collection and disposal contractors, and subsequent monitoring of their performance, minimises the risks described under "Contractor Management" above, as related to waste disposal.

8.42 Reductions in the use of resources, for example through re-use of scrap paper, water and energy conservation, will reduce related procurement costs and reduce waste disposal bills (as will recycling, see paragraphs 8.36–8.40, and the section on waste at paragraph 7.39 ff). Resource efficiency also reduces the indirect impacts associated with use of landfill for disposal. Setting up waste-recycling partnerships with other local businesses can help make collection of recyclables by a local contractor or a charity worthwhile (small amounts from a number of locations).

8.43 When a trust is made up of a number of facilities, regional waste contracts (that is, one contractor covering the region) should be considered as a more cost-effective means of disposing of waste. Using one contractor will also support the consistent generation of waste production data for the purposes of meeting waste reduction targets and external reporting. Responsibility for measuring and monitoring the amounts of waste removed could be passed on to them via the waste disposal contract.

8.44 When selecting and managing waste collection and disposal contractors, it is important to remember the following things:

- legally, under 'Duty of Care for Waste' regulations, contractors must be registered waste carriers in order to be able to transport any kind of waste. If disposing of hazardous (special) waste, as defined under the Special Waste Regulations, they must be registered to carry special waste. An original, valid and current registration certificate should be requested at contractor selection stage (photocopies of such a certificate are not valid and should not be accepted). Even if the waste taken away will be recycled, the contractor or charity should still be registered to do so. Further information on trust waste disposal responsibilities is provided in the publication 'Waste Management: the duty of care' (Department of the Environment). It is strongly advised that estate managers are familiar with this document because failure to comply with duty of care obligations is a criminal offence;
- waste transfer documentation should be held by the facility, in addition to the invoices for the service provided. Waste transfer documentation may take the form of a "waste transfer note" (for non-hazardous waste) or a "special waste consignment note" (for hazardous waste). Generation/retention of this documentation should be a contract condition and should be monitored in order for a facility to meet legal responsibilities.

Transport/travel

8.45 There are a number of incentives to consider alternative-fuel vehicles which have lower pollutant emissions to atmosphere:

- a. the higher cost of diesel and lead-replacement petrol compared to unleaded fuel and Liquefied Petroleum Gas (LPG);
- b. future road taxation policy, whereby all new cars will be taxed on the basis of their carbon dioxide emissions (lower CO₂, lower road tax); and
- c. changes in company car taxation, which will again be based on carbon dioxide emissions as opposed to mileage.

8.46 Trialling prior to purchase of low-emission and/or alternative-fuelled vehicles for provision to staff and patients/visitors (for example mini-buses) may be considered. In addition to purely LPG-fuelled vehicles, dual-fuel LPG-petrol vehicles could be considered, which removes the need to find LPG-fuelling stations every time.

CASE STUDIES

NHS Purchasing and Supply Agency

8.47 As part of its ISO 14001-certified environmental management system (EMS), the NHS Purchasing and Supply Agency set itself a target to source 10% of its electricity from renewable sources by 2010, in direct support of Greening Government targets. Using the expertise of its Energy Buyers, who negotiate contracts on behalf of the NHS, the agency managed to secure contracts for the supply of 100% electricity from renewable sources to its two main office sites, representing approximately 95% of its total electricity consumption. The "green energy" provided by Powergen means the agency is effectively allocated electricity generated from hydro-electric (water) and wind turbines. Although there is a 4% premium for the green tariff, the negotiated rates are predicted to produce a net annual saving of over £5500. In addition to this saving, the effects of the climate change levy are predicted to yield a net revenue income of over £27.5K. The agency has followed Treasury guidelines for integrating environmental considerations into its purchasing decision and is convinced that in light of the savings that are predicted to accrue from reviewing its electricity contracts, the relatively small 'green premium' is justified in terms of demonstrating its commitment to improving its environmental performance. This initiative will also help the agency's wider environmental targets to reduce its annual CO₂ emissions by 1%, which will be taken into account and documented at the end of the financial year in its first environmental report.

Down Lisburn HSS Trust

8.48 Procurement activities are covered by the EMS (certified to ISO 14001) at the Lagan Valley hospital site. Efforts are being made to improve the performance of products and services used by the Trust, for example by specifying that the wooden furniture purchased for new build or refurbishment projects should come from sustainable sources.

For more information on sustainability at the Lagan Valley site, contact the Environmental Officer on 028 9250 1234.

Purchasing refrigerators at the DETR

8.49 In 1993 the Department of the Environment decided to purchase 13 tabletop refrigerators. Its environmental policy included a requirement to purchase products free of ozone-depleting substances, where feasible. As a result, the supply contract specified that the fridges should use a hydrocarbon-blown foam coolant (the only technology then available which did not use ozone-depleting substances). Three manufacturers were able to supply a fridge using this technology and the product offering best vfm was chosen. Interestingly, the best-value product was not that with the lowest initial price. It was, in fact, the most expensive fridge, but that with the lowest running costs.

8.50 The Department set up a call-off contract for the supply of these products and as a result was able to improve its environmental performance, while achieving vfm within the constraints imposed by its own policies.

PURCHASING INITIATIVES WITHIN GOVERNMENT DEPARTMENTS

NHS Purchasing and Supply Agency

8.51 Initiatives include:

- implementation of an EMS certified to ISO 14001, embracing its purchasing and supply activities on behalf of the NHS;
- introduction of environmental criteria in standard terms and conditions;
- environmental training of all agency employees;
- purchasing procedures incorporating environmental considerations, where appropriate; and
- providing guidance and advice to the NHS on a wide range of purchasing issues, including environmental purchasing and supply issues.

Her Majesty's Customs and Excise

8.52 Her Majesty's Customs and Excise requires that all relevant purchases and vfm decisions are made in

accordance with the Environmental Policy Statement, relevant legislation and regulations, guides for suppliers and other official guidance. This includes:

- taking account of whole-life costs and not just the initial price;
- specifying recycled products where they are economical and suitable;
- taking account of the European Commission's mandatory energy labelling scheme by giving preference to the most energy-efficient products;
- taking account of relevant environmental labels and other supplier information to help identify environmentally preferable products (that is, those with a low environmental impact over their life-cycle) and using the Government's Green Claims Code where appropriate;
- issuing a guide to Environmental Procurement to all key purchasing staff – including guidance on integrating the environment into purchasing, prohibitions and best practice;
- integrating training in procurement-related environmental issues into the internal purchasing training programme; and
- publicising environmental policy with regard to suppliers in 'Selling to HM Customs & Excise'.

Department of the Environment, Transport and the Regions

8.53 Initiatives include:

- purchasing officers inserting environmental clauses when relevant to contract;
- endorsing environmental considerations in new invitation-to-tender documentation;
- requesting all contractors to produce their work on recycled paper;
- fostering development and awareness of environmental purchasing requirements through specific training courses and workshops; and
- developing guidelines for other Government departments such as the 'Green guide for buyers' and the 'Green claims code'.

Department for International Development

8.54 Initiatives include:

- eliminating the use of products containing ozone-depleting substances; and

- prohibiting the purchase of furniture containing non-sustainable wood and encouraging the purchase of recycled products.

Environment Agency

8.55 Initiatives include:

- producing a green purchasing manual and green procurement lists; and
- procurement team members working with Regional Environmental Management Advisors to ensure environmental criteria are written into every contract.

Her Majesty's Treasury

8.56 Initiatives include:

- sending the Treasury Environmental Policy with all tender documents; and
- providing advice to Government departments on Green Procurement.

9 Partnerships



INTRODUCTION

9.1 Communities working in partnership with the NHS and local organisations are the best means of assessing need, delivering better information, better services and better community-wide programmes that will lead to better health.

9.2 The White Paper 'Saving Lives: Our Healthier Nation' places requirements on health authorities (along with Local Government) to develop health improvement programmes and on the NHS trusts and primary care groups/trusts to help implement them. The Health Improvement Programme and Health Action Zone initiatives also place responsibilities on health authorities, NHS trusts and primary care groups/trusts to work with local partners to improve the health of the population in their area.

9.3 The benefits for the NHS of participation with their catchment community and with other local service providers include:

- a better understanding of the clinical and other health needs of the area;
- closer relationships with people, helping in the communication of health messages;
- improving the health of the area by supporting and initiating healthy living projects; and
- more effective service provision, by combining with other service providers and reducing bureaucracy.

9.4 This chapter considers the ways in which NHS properties can develop closer links with their catchment community and how increasing NHS participation with other public services and local groups can help the development of healthy communities. Key issues to consider are:

- consultation techniques;
- increasing local participation in health promotion; and
- working with other public services for healthy and sustainable communities.

CONSULTATION TECHNIQUES

9.5 Understanding local issues and needs, and being able to communicate effectively with a range of different parties, should be a foundation for any initiative aimed at health improvement, and is important for developing and managing NHS properties that are useful to, and integrated with, their community.

9.6 Consultation exercises can have three purposes:

- a. informing – to provide information and opportunities for the public to be better informed and gain an understanding of the NHS's policies or priorities;
- b. learning – to listen and learn from the public; and
- c. exchanging information – to define issues and debate problems and solutions with the public.

9.7 The underlying objectives of these processes are to:

- a. develop a better relationship with the public, enhancing the role of health and the health service within the community and providing useful information on health issues; and
- b. improve service delivery and strategy by becoming more responsive to local knowledge and concerns.

9.8 Despite the above benefits of undertaking consultation during decision making, not all techniques are appropriate for each situation, and it is important to select techniques that are suitable for the time scale and resources available. The DETR's Democracy Network produces 'Guidance on enhancing public participation', which outlines the advantages and disadvantages of different consultation methods for meeting different communication objectives, as shown in [Table 6](#).

9.9 Further information on the techniques above, and others, can be found in the Local Government Management Board/Environment Trust publication, 'Creating involvement: a handbook of tools and techniques for effective community involvement'.

Timing of consultation

9.10 To be effective, consultation should be carried out frequently to help build up a rapport between the consultees. However, this is not always feasible because

TABLE 6 THE ADVANTAGES AND DISADVANTAGES OF CONSULTATION TECHNIQUES FOR DIFFERENT PURPOSES

Purpose/Technique	Advantages	Disadvantages
Informing		
Public meeting	Relatively cheap, can be tailored to larger or smaller audiences, can inform and allows public to “let off steam”.	May only attract a limited number of people, can be dominated by activists or those most comfortable about public speaking.
Media	If based on a story, relatively costless. Reaches a wide audience. Quick and responsive.	Media may slant the story. Wide coverage but not universal or representative.
Consultation document	Can act as a starting point for consultation and make clear the views of the health authority.	Often seen as a token gesture. Perceived as expensive. May not be read or understood.
Learning		
Focus groups	Opportunity to explore in depth. Can be designed to enable “non-joiners” to find voice. Group discussion as spark for ideas.	Discussion can be directionless. Can only make limited claims about representativeness.
Complaints schemes	Can identify recurring weaknesses. Shows people you are serious about listening.	The information provided may not be reliable. Can be difficult to know whether one-off failure or general failure.
Satisfaction surveys	Easy to conduct and offer access to users of service. Can focus on key issues.	Key is getting the right questions. Danger of people wanting to complain/say the right thing.
Exchanging information		
Visioning exercises	Can create real sense of involvement. Uses knowledge and understanding of local people. Can build consensus.	Quite time consuming. Can raise expectations. Can be used as an end in itself rather than a tool for dialogue.
Citizens’ juries	Jury can reflect wider population. Enables informed discussion and deliberation. Can tackle complex issues.	Relatively expensive but depends how it is designed. It may be difficult to define a sharp enough question for the jury to address.
User groups	Group has wide knowledge and understanding. The regular dialogue can aid discussion. Useful sounding board for new ideas.	Can give only one perspective. User groups can grow too close to the organisation.

From ‘Guidance on enhancing public participation’, Democracy Network, DETR, 1998

of the costs involved. Key stages for community consultation come when considering major changes to the type or location of services. At these times, consultation should be initiated very early in the decision-making process so that it can have a genuine impact on the outcome. At other times, ongoing feedback and suggestion schemes can provide a relatively low-cost means of keeping aware of concerns.

INCREASING LOCAL PARTICIPATION IN HEALTH PROMOTION

9.11 The health service can increase local participation in health promotion by lending support to initiatives that promote healthier lifestyles and giving guidance on health issues.

9.12 Some ways in which the NHS can work at different levels to promote the health of the local community include:

- healthy living centres – providing health and social services, with facilities for recreation and exercise. The facilities of a healthy living centre should be supported by initiatives aimed at bringing in local people and helping them to make use, and feel ownership, of the centre for learning, fitness and self expression (see case studies);
- support for local health initiatives – by providing advice on healthier living to relevant interested groups, such as schools and centres of higher education, adult learning centres, local businesses, sports clubs, social groups etc (see case studies: Tea Dance Project, Boston (paragraphs 9.23 ff) and Organic Vegetable Scheme, Bradford (paragraphs 9.28 ff));
- providing space for the promotion of social, cultural and sports activities in health centres and practices.

9.13 The health service can also work with local businesses to improve the economic and social development of the area. Supporting local enterprises such as recycling schemes (perhaps allowing collection facilities at NHS properties), using local farm produce or re-usable nappy services (see [box on page 49](#)) can benefit local communities and develop their links with the health service.

WORKING WITH OTHER LOCAL SERVICES

9.14 The development of Health Improvement Programmes and Health Action Zones requires a much greater degree of joint working and partnering between health authorities and Local Government. The most obvious link is between the health and social services; however, community health covers a number of other issues such as employment, housing, poverty and education. The NHS can, therefore, develop productive partnerships with Local Government in many areas, central to these will be contributing to Local Agenda 21¹ (LA21) projects.

9.15 Joint working with Local Government can occur at three levels:

- a. strategic planning – planning for the medium term, sharing information about how resources will be used to meet common goals;
- b. service commissioning – development of a common understanding of needs and the type of service most likely to be effective; and
- c. service provision – to supply an integrated package of care, that avoids the user needing to navigate departmental bureaucracy.

9.16 When planning health services in an area it is important that contact is made with the social services department of the local authority and the potential for collaborative services explored. Collaborative services might involve joint commissioning or either the health or social authority taking the role of lead commissioner. These forms of service have the benefit that they bring valuable facilities together in the same place, enabling users to receive a holistic service; they can also take advantage of increased size for economies of scale and higher visitor levels for improving transport links.

Local Agenda 21

9.17 Local Agenda 21 (LA21) grew out of the 1992 Rio Earth summit, and represents a focus on local action on sustainability issues. All UK local authorities were

committed to developing strategies for implementing sustainable development concepts in their areas by the end of 2000. Along with the Healthy Cities programme of the World Health Organisation (WHO), LA21 represents an important vehicle for joint working between health and local authorities and other groups to help to improve the quality of life in their areas. Within the UK LA21 is co-ordinated by the Improvement and Development Agency (IDeA), formerly the Local Government Management Board. Health authorities and the NHS will be able to contribute to the development and implementation of LA21 strategies and initiatives by providing advice, skills and resources. (See also <http://www.la21-uk.org.uk>)

9.18 The following organisations also act as co-ordinators for the range of health and sustainability projects ongoing in the UK.

Health for All Network

9.19 The Health for All Network is the WHO-recognised body responsible for supporting and enabling the Health for All programme in the UK. Health for All grew out of the WHO Healthy Cities programme reflecting the wider range of health issues being addressed. The Health for All Network enables members to exchange information and identify good practice in different areas. It provides training, seminars and a national database of activities to its members.

Society of Health Education and Promotion Specialists

9.20 The Society of Health Education and Promotion Specialists aims to advance health education and promotion by providing a national forum for exchanging expertise and experiences and by providing professional guidance on such schemes. It is based around the principles of Health for All, LA21 and the Ottawa Charter.

Local Government Associations

9.21 The Local Government Associations of England, Wales, Scotland and Northern Ireland support the work of local authorities and can provide information on their work on sustainable development and health.

CASE STUDIES

Meadowell Health Project

9.22 This project has now been running successfully for over ten years. It involves a different approach to community health, where health issues are considered from the perspective of their interactions with people's lives and environment. Because of the strong emphasis on addressing issues raised by the community, many of the projects have been co-funded and run in partnership

¹ For more on local authorities' initiatives in support of Agenda 21, refer to <http://www.un.org/esa/sustdev/agenda21chapter28.htm>

with (or employing) local people, enabling them to do something about their concerns themselves. Issues covered to date include:

- mental health;
- youth and children's work;
- home safety;
- parenting;
- developing a community mothers' programme;
- exercise;
- the health needs of older people; and
- crime and health.

Tea Dance Project, Boston

9.23 The Boston Heart Health Team initiated the Tea Dance Project in an attempt to increase the levels of physical activity in the over-50 age group. A survey was carried out to identify the forms of exercise that would be most welcome and best attended. The resulting Tea Dances are held throughout the borough, with the aim that all those wishing to attend should be able to reach a centre. As well as increasing fitness levels, the Tea Dances have had significant social benefits as an interesting and fun way for elderly people to meet others, helping to reduce feelings of isolation or depression. Many of the Tea Dance regulars now participate in other social activities such as fundraising to support other health initiatives in the area.

9.24 The Tea Dance Project is the result of a partnership between the Heart Health Team, a community group, the local authority, local businesses and the NHS. Individuals were allowed to develop their own ideas for addressing specific issues, based around close communication at regular group and sub-group meetings.

For more information on the Tea Dance Project, contact the Community Health Facilitator, Boston Borough Council, on 01205 314 200.

Albany Lodge Community Treatment Unit, St Albans

9.25 The Albany Lodge Community Treatment Unit is a short-term care, assessment and day-care facility for mentally handicapped patients. The site was designed to reflect the style of other local buildings and is based around five-house clusters (this allows the patients to be cared for in specific medical or social groups without losing communal open areas).

9.26 Initially, the development was not popular with the local communities, but it gained greater acceptance when the site car parking area was allowed to be used

for car boot sales at weekends. This helped to build links between the community and the facility and helped with gaining planning consent.

9.27 During the construction of the unit, two trees needed to be cut down and removed. Working with the local art college, the trees were used to build a series of sculptures for the grounds. The sculptures were appreciated by both staff and patients, and further work commissioned from the art college because of its beneficial effect on the site's environment.

For more information on sustainability at Albany Lodge, contact Medical Architecture and Art Projects (MAAP) Ltd on 020 7613 2192.

Organic vegetable scheme, Bradford

9.28 In this project a group of Bangladeshi women have been supported in a community gardening programme. This has had the effect of increasing their fitness, promoting a healthy lifestyle and social inclusion within a community where over half the population are unable to speak, read or write English and where heart disease is a major risk.

9.29 The results to date have been a noticeable improvement in community health (through improved diet and increased exercise) and the development of gardening knowledge within the community, which the participants are now passing on to other local residents.

For more information on the organic vegetable scheme at Bradford, contact the Bradford District Health Promotion Service on 01274 223910.

Neptune Health Park, Tipton

9.30 This is a new-build practice that has relocated from existing premises about 300 metres distant. Tipton was the recipient of City Challenge regeneration funding from 1993 to 1998. From a health standpoint it is an area of health need, having levels of mortality and morbidity higher than regional and national averages for a variety of lifestyle-linked reasons.

9.31 The capital monies provided through City Challenge did not increase the range of services provided in Tipton, but provided the following benefits:

- a. enabled the upgrading of premises and facilities for all the services provided. These could not have been afforded separately;
- b. enabled their co-location onto a landmark site, close to the town centre and with good public transport links;
- c. remediated a contaminated, brownfield site. The involvement of British Waterways secured environmental improvements along the canal; and

d. provided additional focus to the community through the provision of social facilities.

9.32 The centre's emphasis is on innovative primary care and promotion of health rather than treatment of illness alone. The site also includes a well-used Health Information Centre, community rooms and a refreshment area. Other innovations include physiotherapy, chiropody, an optician, a pharmacy, a Citizens' Advice Bureau and a range of community nursing inputs. It was also planned to include facilities for minor surgery and X-rays.

9.33 The practice acts as a health resource for Tipton generally in support of other practices. It is a clinic location for visiting consultants and was designated a Personal Medical Services pilot scheme which establishes GPs with particular expertise to accept referrals from other Tipton practices. Both these arrangements avoid the need to refer to hospital services, so saving delay and travel.

9.34 Community involvement undertook a number of forms. There was community consultation on the range of services to be provided as well as the roadshow presentations of the scheme, which sought suggestions on the building layout and fabric.

For more information on sustainability at Neptune Health Park, contact Max Fordham and Partners on 020 7267 5161.

Warwickshire Fall Prevention Programme

9.35 Warwickshire Health Authority initiated a project to provide a holistic approach to reducing the risk and fear of falling by the elderly that was preventing their enjoyment and participation in the community. Those members of the community felt to be at risk from falling were given information and advice on a range of topics, including exercise, diet, medication, footcare and support services. Courses were run over ten weeks by nursing staff from local GP practices. Both participants and staff found the courses to be of value, with the increased social contact for people of limited mobility and the acknowledgement of the problem of falls in their lives being important secondary benefits.

For more information on the Warwickshire Fall Prevention Programme, contact Warwickshire Health Authority on 01788 812031.

Community Consensus Building, Stratford on Avon District Council

9.36 The Community Consensus Building project in Stratford on Avon is encouraging local village communities to develop ideas and actions for sustainability by providing free facilitation services. The aim is to improve quality of life and move towards sustainable development by enabling different interests within communities to reach consensus. Stratford has significant rural communities and it was felt important to tackle issues of isolation and disempowerment in these areas. There are now ten trained facilitators working with three pilot villages and it is planned that these should be extended to all the parishes in the district.

9.37 The results of these consensus building processes have been several village sustainability initiatives and a widely acknowledged improvement in community spirit.

For more information on consensus building processes, contact the Environmental Co-ordinator, Stratford on Avon District Council, on 01789 260117.



CENTRAL MIDDLESEX HOSPITAL AMBULATORY CARE
AND DIAGNOSTIC CENTRE: AVANTI ARCHITECTS
(PHOTOGRAPH: NICHOLAS KANE)

Part III Further information

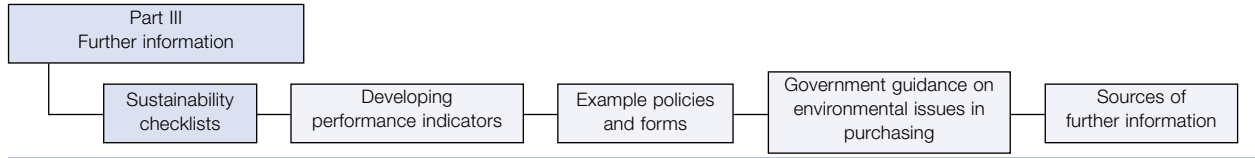
Part III provides some further information resources for issues discussed in [Part II](#). It contains:

- summary checklists of issues to consider for each topic area;
- guidance on developing performance indicators;
- example policies and forms;
- Government guidance on environmental issues in purchasing; and
- sources of further information.

LYNFIELD MOUNT, BRADFORD: PHOTOGRAPHERS FOCALPOINT (DAVID FRANKLAND)



10 Summary checklists of issues to consider for each topic area



CENTRAL MIDDLESEX HOSPITAL AMBULATORY CARE AND DIAGNOSTIC CENTRE: AVANTI ARCHITECTS (PHOTOGRAPH: NICHOLAS KANE)



TABLE 7 SUSTAINABILITY ISSUES TO BE CONSIDERED DURING STRATEGIC PLANNING OF NHS ESTATE

Area	Question	Source of further information
Location	<p>Does the strategy enable most people to gain access to primary, secondary and tertiary healthcare in the region by:</p> <ul style="list-style-type: none"> • ensuring that the existing estate is in the right places. If not, how can services be provided to currently unserved areas (e.g. localised primary care, mobile care, working with transport providers to give communities better access to existing facilities etc.)? <p>Does the strategy help this to be achieved while minimising the use of private cars by:</p> <ul style="list-style-type: none"> • ensuring the design of the building best accommodates the needs of public transport users (e.g. through waiting areas, information systems etc.)? <p>Does the strategy enable the estate to perform against performance indicators such as:</p> <ul style="list-style-type: none"> • the number of patients finding access difficult (with and without a car)? • the proportion of patients and staff using different transport modes to access the site? 	Chapter 4
Estate audit	<p>Does the estate strategy meet changing health needs or population distribution by:</p> <ul style="list-style-type: none"> • ensuring the existing estate is of the right size and specification to meet changing healthcare needs and adapt to incorporate new technologies? If not, is replacement justified, can renovation provide the same or similar benefits? • ensuring the estate configuration makes best utilisation of available space? • considering how the healthcare needs of the region are developing and whether existing facilities meet these requirements? 	Chapter 4
Whole-life approaches	<p>Does the estate strategy ensure that the estate gives the best whole-life value for operating the health service by:</p> <ul style="list-style-type: none"> • assessing the costs of using existing estate compared with those of a more modern and efficient building? Is replacement justified, can renovation provide the same or similar benefits? • considering how changing energy costs might affect this? • considering how the whole-life performance of the building can be maximised by design and material selection? • reviewing the performance of estate by comparison against current best practice guides and benchmarking data from other facilities? 	Chapter 4

TABLE 8 CHECKLIST OF SUSTAINABLE DEVELOPMENT ISSUES TO CONSIDER WHEN CONDUCTING ESTATE PLANNING

Area	Question	Source of further information
Buildings, planning and land use	Does the proposal make the best use of land and buildings by: <ul style="list-style-type: none"> • using brownfield sites or vacant buildings rather than building in greenfield areas? • enhancing the built environment and preserving local heritage? • minimising resource use and ensuring buildings are designed for a long life span? • ensuring developments maximise security (lighting, natural surveillance etc.)? • improving the vitality of the local centre? 	Paragraphs 5.6–5.14 and 5.15–5.27
Transport	Does the proposal meet people’s transport needs and protect the environment by: <ul style="list-style-type: none"> • improving conditions and facilities for pedestrians and cyclists? • encouraging the use of public transport? • discouraging the use of cars and lorries? • improving access to facilities for those without a car? • ensuring that healthcare facilities are within easy travelling distance of local population centres? 	Chapter 4 and paragraphs 5.6–5.14 and 7.67–7.95
Waste, resources and energy (see also Table 9)	Does the estate option ensure energy and resources are used wisely by: <ul style="list-style-type: none"> • reducing energy use through efficiency and design measures? • taking measures to recycle or re-use waste or avoiding unnecessary resource use? • using renewable sources of energy or CHP? 	Chapter 4 and paragraphs 6.3–6.29 and 7.3–7.32
Pollution	Does the estate option lead to a cleaner environment by: <ul style="list-style-type: none"> • protecting water quality? • reducing air pollution? • reducing noise? 	Paragraphs 5.6–5.14 and 6.3–6.29
Wildlife and open spaces	Does the proposal enhance the diversity and abundance of wildlife and open spaces by: <ul style="list-style-type: none"> • protecting and enhancing biodiversity? • ensuring landscape quality? 	Paragraphs 6.3–6.29
Social needs	Does the proposal meet the needs and aspirations of local people by: <ul style="list-style-type: none"> • improving access to, and quality of, health facilities? • reducing factors that contribute to ill health (poverty, diet, lifestyle, pollution)? • improving access to education and training opportunities for all? • improving facilities and choice in the provision of social care for all? • improving facilities and opportunities for disabled people? • improving facilities, access and opportunities for adults and young children? 	Chapters 4 and 5 and paragraphs 9.11–9.13 and 9.14–9.21
Arts, culture and leisure	Does the proposal provide cultural and leisure opportunities for all by: <ul style="list-style-type: none"> • providing accessible sporting and leisure facilities and opportunities? • increasing enjoyment of – and participation in – arts, local culture and heritage? • promoting racial harmony and building on local cultural diversity? 	Paragraphs 9.14–9.21
Participation and democracy	Does the proposal improve public awareness and participation by: <ul style="list-style-type: none"> • seeking (or having sought) local community participation in its development stages? • improving opportunities for participation in local action and decision making? • encouraging responsible behaviour by local people or improving awareness of issues, rights and opportunities? 	Chapters 4 and 5 and paragraphs 9.5–9.10
Economy and work	Does the proposal help to meet economic and employment needs of people and businesses by: <ul style="list-style-type: none"> • reducing poverty and low pay? • increasing employment opportunities for local people? • linking local production with local consumption? • helping local and community-based businesses to set up and grow? 	Paragraphs 6.30–6.48, Chapter 8, and paragraphs 9.14–9.21

TABLE 9 CHECKLIST OF SUSTAINABLE DEVELOPMENT ISSUES TO CONSIDER DURING ESTATE DESIGN AND CONSTRUCTION

Area	Question	Source of further information
DESIGN		
Layout	Does the design make best use of the available site by: <ul style="list-style-type: none"> • reducing heat loss from the building, by using a low rise compact design, and utilising shelter from the landscape and vegetation? • locating services in areas where the need to travel horizontally and vertically in the hospital is minimised? • providing safe access for pedestrians and cyclists? • minimising the amount of hardstanding area and using porous surfaces where possible? 	Paragraphs 6.3–6.29
Flexibility	Does the design enhance the flexibility of the site for healthcare and other uses through: <ul style="list-style-type: none"> • incorporating standardised room sizes around a few basic templates? • enabling reconfiguration of internal walls if necessary? 	Paragraphs 6.3–6.29
Energy efficiency	Does the design ensure energy and resources are used wisely by: <ul style="list-style-type: none"> • reducing energy use through efficient design measures such as solar design or high performance insulation? • using renewable sources of energy or CHP? • specifying low-energy appliances, particularly those with a low heating load? 	Paragraphs 6.3–6.29 and 7.3–7.32
CONSTRUCTION		
Environmental	Does the construction process minimise environmental impact by: <ul style="list-style-type: none"> • minimising the amount of waste generated and re-using, recycling or composting where possible? • using materials from more sustainable sources (considering material extraction, manufacture and transportation)? • complying with the Considerate Constructors' code of practice? • employing suitable risk-management procedures to minimise the risk of pollution incidents? 	Paragraphs 6.30–6.48
Social	Does the construction process maximise social benefits by: <ul style="list-style-type: none"> • providing employment and training for local people? • working with local communities to integrate the development and make use of waste materials where possible? 	Paragraphs 6.30–6.48
Procurement	Does the procurement process maximise the potential for the sustainable design and construction of the healthcare facility by: <ul style="list-style-type: none"> • selecting the project contractors on the basis of the principles of 'Rethinking Construction'? • ensuring that whole-life costing is incorporated within the project specification? 	Paragraphs 6.49–6.56 and Chapter 8

TABLE 10 CHECKLIST OF SUSTAINABLE DEVELOPMENT ISSUES TO CONSIDER FOR OPERATIONAL ACTIVITIES

Area	Question	Source of further information
Environmental management systems	Does the site manage its environmental aspects through: <ul style="list-style-type: none"> • regularly reviewing its principal environmental aspects? • developing a strategy to address these aspects and identifying targets for improvement? • preparation of procedures to implement the strategy? • raising staff awareness and training them in the procedures? 	Paragraphs 3.3–3.44
Energy management	Is operational energy use managed effectively on-site through: <ul style="list-style-type: none"> • use of well-insulated and controllable systems, where necessary? • using energy-efficient appliances? • reducing cooling requirements through the use of appliances which have low cooling loads? • ensuring that plant on-site is appropriately sized and that combined heat and power sources are used where appropriate? • using decentralised generation of hot water or steam where appropriate? 	Paragraphs 7.3–7.32
Water management	Do operational activities minimise water use through: <ul style="list-style-type: none"> • identifying the main areas of water consumption on-site? • checking for leaks in the supply system? • taking opportunities to reduce water consumption through use of low-water or waterless appliances? • collecting rainwater where possible or utilising a greywater recycling system? 	Paragraphs 7.33–7.38
Waste management	Do operational activities minimise waste arisings through: <ul style="list-style-type: none"> • engaging senior clinical and management commitment to waste minimisation? • understanding the sources and costs of wastes generated on-site? • ensuring that waste is disposed of via the correct disposal route and that all recycling is carried out where economically viable? 	Paragraphs 7.39–7.66
Travel	Does the site encourage the sustainable use of transport for access through: <ul style="list-style-type: none"> • close relations with other public and transport service providers? • locating facilities in areas where they can be reached by means other than by car? • surveying current site access means and developing a strategy to reduce the use of single-occupancy cars? 	Paragraphs 5.6–5.14 and 7.67–7.95

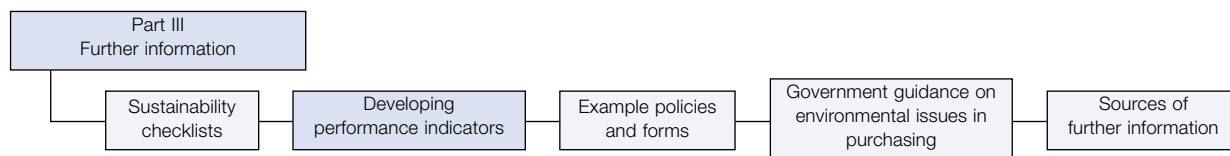
TABLE 11 CHECKLIST OF SUSTAINABLE DEVELOPMENT ISSUES TO CONSIDER FOR PURCHASING AND SUPPLY

Area	Question	Source of further information
Specifications	Do contract specifications enhance sustainable development through: <ul style="list-style-type: none"> • reflecting departmental or trust policies relating to the use of products and services? • incorporating whole-life issues? 	Paragraphs 8.10–8.19
Contract award	Do contract awards consider whole-life costs?	Paragraphs 8.10–8.19
Contract management	Does the management of contractors ensure that relevant legislation site policies are adhered to through regular audits of contractor activities?	Paragraphs 8.20–8.25

TABLE 12 CHECKLIST OF SUSTAINABLE DEVELOPMENT ISSUES TO CONSIDER FOR ENHANCING PARTICIPATION AND HEALTH PROMOTION

Area	Question	Source of further information
Consultation	Are consultation activities carried out at appropriate times during the planning, design and operation of facilities?	Paragraphs 9.5–9.10
Health promotion	Does the estate option help to promote healthy lifestyles in the community?	Paragraphs 9.11–9.13
Partnerships	Are efforts made to work with local authorities and other service providers to improve the quality and efficiency of healthcare and health promotion services?	Paragraphs 9.14–9.21

11 Guidance on developing performance indicators



11.1 This chapter considers some of the recent and ongoing work of Government departments and different sectoral organisations, aimed at developing performance measures that represent different aspects of sustainability in the UK.

GOVERNMENT INDICATORS OF SUSTAINABLE DEVELOPMENT FOR THE UK

11.2 In May 1999, the DETR released its revised sustainable development strategy, 'A Better Quality of Life'. The strategy addresses sustainable development under several broad themes, which are illustrated through the use of around 150 indicators that attempt to measure progress towards sustainable development for work, education, health, transport, buildings, the countryside and communities. From the 150 measures, 14 were chosen as headline indicators because it was felt that they best captured the key aspects of sustainability in the UK and addressed the concerns of a wide audience. The remaining indicators are intended to enable monitoring of the progress of specific sectors or policies towards sustainable development; these are in turn supported by a range of sectoral strategies providing more detailed analysis.

11.3 Although the chosen indicators (particularly the choice of headline indicators) are subject to periodic revision, these indicators will form the measures of success for Government policy on sustainability. The first reporting of the sustainable development indicators was published later in 1999, entitled 'Quality of life

counts', and further reports will be published annually, with a thorough review after five years.

The headline indicators

11.4 The headline indicators of sustainable development for the UK are shown in the box below. The presence of a headline indicator for health demonstrates the importance of these issues. The indicator for healthy life shows that although people are living longer, more years are being spent in poor health.

11.5 Several of the other headline indicators are also relevant to the health of the population because of the interconnectivity of sustainability issues. For example, the quality of UK housing, days of poor air quality and levels of road traffic can be directly linked to health issues, while economic growth, levels of public investment and educational attainment have more indirect influences. In working towards improving the number of years of healthy life it will also be necessary to address the other indicators, and the NHS can play its part in these areas as well.

Health indicators

11.6 'Quality of life counts' contains a number of other health indicators in addition to the headline health indicator. The indicators targeted specifically at measuring health include:

- death rates from cancer, circulatory disease, accidents and suicides;

The headline indicators of sustainable development in the UK

- Total output of the economy;
- Investment in public, business and private assets;
- Qualifications at age 19;
- Expected years of healthy life;
- Homes judged unfit to live in;
- Level of crime;
- Emissions of greenhouse gases;
- Days when air pollution is high;
- Road traffic;
- Rivers of good or fair quality;
- Populations of wild birds;
- New homes built on previously developed land;
- Waste arisings and management; and
- Satisfaction with quality of life.

'A Better Quality of Life', DETR, 1999.

- respiratory illness – prevalence of wheezing in the year;
- health inequalities – life expectancies for different societal groups; and
- NHS hospital waiting lists – number of people awaiting admission at NHS hospitals.

11.7 These indicators are based around the goals set out in the Health White Paper ‘Saving Lives: Our Healthier Nation’, in which they are specifically targeted, and the success of the NHS in delivering its contribution to sustainable development will be largely based on its ability to improve performance against these indicators. While some of these indicators (such as inequalities in treatment and waiting lists) are issues over which the NHS has a measure of control, for others it is less able to directly influence performance. For these indicators it is the NHS’s role to work with the range of other stakeholders to find solutions (see [Chapter 9](#)).

OPERATIONAL INDICATORS

11.8 Many of the UK sustainable development indicators are not health related, but are relevant to the sustainable operation of the NHS. Because the indicators are designed to give an impression of the state of the UK as a whole, in most cases they are not directly applicable to an NHS situation. However, they are good measures of the external impacts of providing a health service and most can be modified to consider the NHS as a whole, or for use by a single health authority, trust or primary care facility.

SECTORAL INDICATORS

11.9 To more closely address the sustainability needs of individual sectors, several sets of sectoral indicators have been developed, some using the DETR’s UK indicators as a basis. The most thoroughly researched areas for indicators are those connected to the construction process and to a lesser extent the rest of the building life-cycle.

11.10 Over 100 indicators for sustainable construction have been developed by:

- Construction Industry Research and Information Association (CIRIA);
- Building Research Establishment (BRE); and
- Foresight Construction Panel.

11.11 These indicators address common themes relating to the design and construction phase of a building’s life, such as efficient use of materials, environmental awareness and responsibility of construction companies, reduction of pollution incidents

and nuisance, and energy efficiency. At present there is no widely accepted set of indicators, partly because of the number of separate studies being carried out and partly because of the high number of indicators being proposed making them difficult to take on board.

11.12 Work is continuing on the development of consensus-based, industry-wide sustainability indicators for construction companies (CIRIA), and for a measure of the sustainability of individual projects (BRE). When completed, these projects should provide a consistent set of measures that can be used for construction projects.

11.13 As yet there are no specific indicators of sustainable development for building operations. The Building Services Research and Information Association (BSRIA) is currently working on the development of a set of indicators to address this.

POSSIBLE INDICATORS OF SUSTAINABLE DEVELOPMENT FOR THE NHS

11.14 [Table 13](#) presents some possible sustainable development indicators that could be used to measure the operational performance of the NHS, and in particular its estate. The list is not comprehensive and will evolve as further information becomes available; it is intended as a basis from which relevant indicators can be selected, or adapted to suit particular requirements.

11.15 The indicators are based on those used for the UK (with adaptation for a health service setting) and from some of the relevant sectoral indicators available.

11.16 The indicators are not intended to address the strategic efforts of the NHS in contributing to a healthier UK, because these are covered by the indicators in the UK strategy and health White Papers.

11.17 Care needs to be taken when interpreting indicators, for example new treatment techniques may result in increased energy usage, but less cost, less waste and shorter in-patient stays. It is, therefore, important that changes in service type are incorporated into the evaluation of the messages behind the indicators. By breaking up the data for the indicators into the relevant functional units of the facilities it is possible to determine where changes are occurring and thereby better understand the reasons.

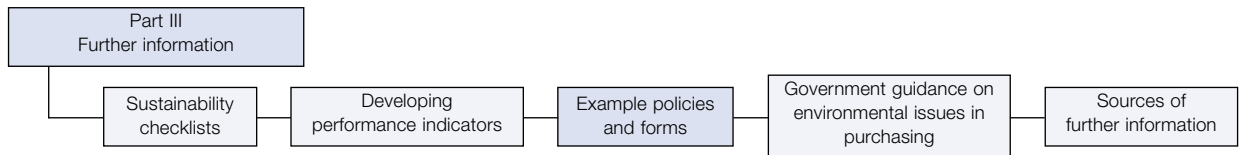
11.18 In order to report against several of the proposed indicators it may be necessary to introduce environmental monitoring systems. Approaches to measuring and monitoring environmental aspects are considered in [Chapter 3](#) under Environmental Management Systems, at [paragraph 3.8 ff.](#)

TABLE 13 POSSIBLE SUSTAINABLE DEVELOPMENT INDICATORS RELEVANT TO THE OPERATIONS OF THE NHS

Theme	Indicator	Rationale	Interpretation
Planning	Use of previously developed land	Re-using previously developed land in order to protect the countryside and encourage urban regeneration.	More use of previously developed sites means more efficient use of land and better transport links.
Design and construction	Primary aggregates used per unit of construction value	Efficient use of aggregate material can save money, reduce waste, and reduce energy use and pollution from supply. It is estimated that up to 10% of national energy consumption is used for the production and transport of construction products.	Reduced aggregate use per unit of construction value can result from increased efficiency in construction, or greater use of secondary aggregates or alternative construction materials.
	Amount of secondary / recycled aggregates used compared with primary aggregates	To maximise efficient use of materials and greater use of recycled and waste materials.	Increased use of secondary/recycled aggregates reflects a more efficient use of resources.
	Construction and demolition wastes going to landfill	Efficient use of construction materials at all construction stages maximises opportunities for re-use and recycling. Greater resource efficiency helps to reduce the environmental impacts of construction.	A decline in the amounts of construction waste going to landfill can reflect either a reduction in the amount of waste generated, an increase in percentage re-used/recycled or an increase in unauthorised dumping.
Energy and resource efficiency	Energy use (per m ² floor area)	Minimising the use of energy within a building saves money and reduces the demands on fuel sources thereby preserving non-renewable resources and limiting environmental pollution. Nearly half of all UK CO ₂ emissions result from energy used in buildings.	Reduced energy use per patient can signal a more efficient use of energy, changing treatment practices that require less energy, or a change in the types of treatments being provided. More detail can be obtained by looking at waste arisings for specific treatments or activities.
	Energy efficiency of fleet vehicles (CO ₂ emissions km ⁻¹)	Vehicles are a major source of atmospheric pollution, with high levels of localised exposure to PM ₁₀ and other substances harmful to health. More efficient vehicles can reduce fuel costs and reduce environmental and health impacts.	A reduction in atmospheric pollution per km travelled indicates a reduced environmental burden from transport.
	Water use (per m ² floor area)	Although a renewable resource, there are limits to freshwater availability and water should be used wisely to ensure that use does not exceed environmental capacity.	Reductions in water use decrease the impact on local water resources.
Waste management	Waste arisings per patient (or per finished consultant episode) <ul style="list-style-type: none"> • Clinical • Non-clinical 	<p>The disposal of clinical waste represents a major source of expenditure and results in environmental impacts from incineration or landfill. Reducing waste arisings also signals a more efficient use of natural resources.</p> <p>Disposal of clinical waste is significantly more expensive than other forms of hospital waste. Therefore, significant economic savings can be made through accurate segregation of waste streams.</p>	A reduction in waste arisings per patient can signal a more efficient use of products, changing treatment practices that generate less waste, or a change in the types of treatments being provided. More detail can be obtained by looking at waste arisings for specific treatments or activities.
	Materials recycling	Waste that is segregated for recycling can provide a valuable resource and reduce waste disposal costs.	An increased proportion of waste being recycled indicates that more efficient use is being made of resources.

Theme	Indicator	Rationale	Interpretation
Control of environmental impacts	Adoption of environmental management systems	Environmental management systems provide a mechanism for integrating environmental initiatives, ensuring they are co-ordinated and communicated to all staff.	An increased adoption of management systems signifies a structured approach to environmental issues and a willingness to take these into operational decisions.
	Emissions of selected pollutants (CO, NO _x and PM ₁₀)	Control of air pollution is a key sustainable development objective, for reducing the risk of harm to human health, the natural environment and quality of life.	Reduced emissions of these substances from on-site sources will help to improve local air quality.
	Sulphur dioxide and nitrogen oxides emissions	Transport and small combustion sources can make significant contributions to sulphur dioxide and nitrogen oxides emissions. These pollutants are major contributors to local air pollution and wider problems of acidification.	Reduced emissions of these substances from on-site sources will help to improve local air quality and reduce acidification.
	Emissions of CO ₂	With 1% of the population the UK emitted 2% of CO ₂ in 1995. All developed countries have recognised the need to reduce greenhouse gas emissions which cause climate change.	Reduced emissions of CO ₂ from NHS buildings will help the UK to reduce total emissions and meet the obligations of the Kyoto protocol.
Travel and access	People finding access to health services difficult (within each health authority)	Access to services such as a doctor or hospital, at a reasonable price, by means other than a car, is an important element of sustainable development. In 1997/98, 38% of householders without a car said it was difficult to get to a hospital and 16% said it was difficult to get to a doctor.	Improved access to services reduces the need for private transport in many instances and promotes a better quality of life.
	How staff and patients get to the hospital (percentage of staff using different modes)	Cars are the most common form of transport when visiting hospital (and are often necessary for sick or disabled patients). However, encouraging staff and patients to use other transport modes would reduce traffic growth and associated environmental, economic and social costs.	Reducing the use of private cars when travelling to hospitals or other healthcare facilities would help to reduce road traffic, congestion and air pollution. Increased use of walking or cycling by staff would also improve staff health.
Staff	Work fatalities and injury rates	Everyone should be able to work in a safe environment.	Reduced accident and injury rates indicate a safer working environment.

12 Example policies and forms



12.1 This chapter provides some sample environmental policies and forms that can be used when beginning to address environmental and sustainable development issues in an NHS facility. These tools are not intended to provide all the information necessary to implement an Environmental Management System to ISO 14001 standard, but will help with beginning the process.

12.3 These documents are not intended to be prescriptive in any way and it may be that estate-specific needs require the modification or replacement of different sheets or the addition of new sheets to address locally important issues.

12.2 Examples are provided of the following documents:

- Environmental policy;
- Register of environmental aspects;
- Register of relevant environmental legislation;
- Objectives and targets form;
- Environmental management procedure proforma; and
- Audit of travel movements, site releases to air and water and waste arisings.

ENVIRONMENTAL POLICY (EXAMPLE FROM EAST KENT HOSPITALS NHS TRUST)

East Kent Hospitals NHS Trust comprises six main sites providing healthcare services to the communities across East Kent.

The Trust acknowledges the potential impact that its activities have on the environment and is committed to ensuring environmental management is an integral part of healthcare provision. The commitment of the Trust is demonstrated through the appointment of the Director of Facilities as responsible for environmental issues and the adherence to an Environmental Management System (EMS). In recognition of this commitment and in acknowledgement of its duties, the Trust will:

- Adopt an approach of “reduce, recycle and re-use” in its consumption of resources with sustainability being a key element of any development.
- Minimise the production of waste and dispose of all wastes, which are not practicable to recycle, through safe and reasonable methods.
- Acknowledge and abide by its legislative responsibilities and fulfil its duty of care to its employees and the general public.
- Educate, inform and instruct staff to enable them to complete their tasks with increased environmental awareness and decreased environmental detriment.
- Operate within the limits of the Environmental Management System and the specifications of ISO 14001 whilst achieving defined objectives and demonstrating a commitment to continual improvement.
- Commit to the prevention of pollution of air, land and water and where such pollution is identified to effectively remedy the situation.
- Maintain an emergency contingency plan formulated to minimise the impact and detriment of environment incidents.
- Continue to promote the efficient use of energy and water resources and where viable invest in energy-saving technology and management.
- Commit to a long-term project of evaluating the level of environmental commitment demonstrated by suppliers and contractors to the Trust and encouraging the adoption of EMS in the absence of structured environmental policy.

The implementation and management of this Environmental Policy will be maintained through the commitment of Trust employees, contractors and suppliers. The Trust will endeavour to influence future policies through its awareness and commitment to environmental responsibilities and issues.

David Astley
Chief Executive, East Kent Hospital NHS Trust

October 2000

(For more information on the Environmental Policy at East Kent NHS Trust, contact the Non-Clinical Risk Manager on 01227 766877).

REGISTER OF ENVIRONMENTAL ASPECTS (EXAMPLE FROM EAST KENT HOSPITALS NHS TRUST)

ENVIRONMENTAL ASPECT/DEPARTMENT	ENVIRONMENTAL IMPACTS	EFFECTS CODE	VOLUME/WEIGHT/FREQUENCY/CONSUMPTION	DETAILS OF CONTROL & MONITORING	
SURGICAL SERVICES (Maxillofacial – clinic & labs Kent, Clarke, Lipscomb & Lucas Wards, Fracture Clinic, Out-patients’ Clinics, clinical & administrative activities).	WASTE GENERATED:		Estimated quantities	Hospital policy to segregate at source. Refer to Contract Management’s aspect form for tonnage figures.	
	Clinical	W			
	General household	W			
Kent & Canterbury Hospital	Recycled waste:				
	Paper	W			
	EMISSIONS TO ATMOSPHERE				
	Vapours	E		Max.Fac. Lab – Fume cupboard & extraction system in use.	
	DISCHARGE TO DRAINS				
	Hazardous substances	W/D		Diluted & disposed of to sluice. COSHH Assessments completed. PPE worn, infection control manual referred to as required.	
	Body fluids	W/D			
	UTILITY CONSUMPTION				Refer to Estate’s aspects form for site summary.
	Water	U			
	Electricity	U			
NOISE					
RISK OF CONTAMINATION & INFECTION				Potential for infection/contamination if safe practices are not used.	
Normal conditions	YES				
Abnormal conditions	YES				
OTHER					

Effects Code: E = Emission to Atmosphere, W = Waste (Liquid or Solid), D = Liquid Discharge, U = Utility, N = Noise, O = Odour, T = Dust

REGISTER OF RELEVANT ENVIRONMENTAL LEGISLATION (EXAMPLE OF EMISSIONS TO AIR)

Section 1. Emissions to air

Legislative Item(s): Environmental Protection Act 1990 Part I; The Environmental Protection (Prescribed Processes and Substances) Regulations 1991 (SI 472) (as amended).

Regulator: Environment Agency and Local Authority

Description

Part I of the EPA provides a framework to prevent or minimise environmental pollution by prescribed substances from industrial processes. Schedule 1 of the Environmental Protection (Prescribed Processes and Substances) Regulations describes the industrial processes and substances which fall within the scope of these regulations. Best Available Techniques Not Entailing Excessive Cost (BATNEEC) should be used to minimise releases. Advice on requirements is provided in Process Guidance Notes. The level of control falls into two categories:

- Integrated Pollution Control (IPC) (Part A processes) covers emissions to air, land and water from the most polluting and complex industrial processes. This is enforced by the Environment Agency.
- Air Pollution Control (APC) (Part B processes) covers emissions to air from lesser polluting industrial processes. This is enforced by the Local Authority.

In both cases the company is required to provide to the enforcing authority a detailed description of the process and controls in place (the application). Upon reviewing the application, the authority may issue an authorisation which allows the company to operate the process subject to certain conditions. It is an offence to operate the process in contravention of the authorisation or its conditions.

Relevance to [organisation name]

The production of energy from waste incineration is a Part A Prescribed Process. Estate XYZ therefore must operate in accordance with an IPC Authorisation granted by the Environment Agency. The authorisation contains conditions including the limits for releases to air, controlled waters, sewers and other releases from the process, reporting requirements and an improvement programme.

The scope of the authorisation covers the operation of the effluent treatment works, the gas abatement plant and the clinical waste plant (through a variation of the original authorisation).

Responsible person/key contact:

Ref. to other part of EMS (for example Environmental Aspects/Objectives and Targets):

Environmental Aspects Register Sections 4 and 6; MSP17 Waste Incineration, MSP19 Effluent Treatment Plant, MSP60 Clinical Waste Handbook, MSP62 Clinical Waste Autoclave Facility Handbook.

Ref. to relevant Licence/Permit/Notification or Authorisation:

Authorisation AG 5269. Variations AL2900, AV6922, AV6922.02, AV 6486.

Further information (for example Codes of Practice):

IPC Guidance Note S2 5.01 (Waste Incineration).

OBJECTIVES AND TARGETS FORM

Example environmental objectives and targets

Objective	Target
Reduce electricity consumption relating to lighting use.	Reduce electricity consumption by 10% based on 1999 consumption by end 2000 by replacing all traditional bulbs with energy efficient bulbs. Deliver an energy efficiency awareness session to 90% of the workforce by June 2000
Reduce water consumption wherever technically and commercially feasible.	Reduce the consumption of water by 10% by 2001 based on 1999 consumption by installing water-saving devices in washrooms.
Reduce the amount of waste generated on-site that is disposed to landfill.	Introduce paper, cardboard and plastic recycling on-site by end 2001.
Improve understanding of the environmental performance of key suppliers.	Investigate environmental performance of key suppliers through questionnaire survey by the end 2001.
Reduce potential for pollution of controlled waters	Ensure that all chemical storage areas are adequately banded by mid 2001. Establish a chemical spill response team, providing adequate training, by mid 2001.
Improve environmental awareness of staff by end of the year.	Ensure at least 95% of staff have attended the environmental awareness training course by the end of the year.

ENVIRONMENTAL MANAGEMENT PROCEDURE PROFORMA

A. NHS Trust	Procedure title	Issue status
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1. Objective/Scope

Outlines the purpose of the procedure, what it aims to achieve and to which functions / departments of the organisation it applies.

2. Introduction

This section can be used to include relevant background information putting the procedure in context, but is not always necessary.

3. Responsibilities

Defines responsibilities for implementing and maintaining the procedure and any other pertinent roles.

4. Procedure

Provides specific instructions regarding specified activities. Usually presented in sub-sections.

5. Records

Specifies what records are to be retained by whom, for what period, and their location(s).

EXAMPLE STAFF TRAVEL SURVEY FORM ¹

1. Name and address

.....

2. Gender

Male	
Female	

3. Staff group (e.g. nursing, catering, administration)

.....

4. Usual place of work (building and site name)

.....

5. How often do you work at more than one location?

Never	
Less than once a week	
One to four times a week	
Once a day	
More than once a day	

6. How old are you?

Under 25	
25–34	
35–44	
45–54	
55 or over	

7. Do you have a disability which affects your travel arrangements?

Yes	
No	

8. How many days in an average week do you work?.....

¹ Copied from 'Healthy Transport Toolkit', Transport 2000, issued under HSC 1998/181.

9. Do you normally work

Normal working day	
Day shifts	
Out of hours	
Other (please specify)	

10. How do you mostly travel to work?

Bus	
Bicycle	
Car (alone)	
Car (with others)	
Foot	
Motorbike	
Train	
Other (please specify)	

11. Which of the following do you occasionally use instead of your usual form of transport?

Bus	
Bicycle	
Car (alone)	
Car (with others)	
Foot	
Motorbike	
Train	
Other (please specify)	

12. How far do you travel to work?

Up to 1 mile	
1–2 miles	
2–4 miles	
4–10 miles	
10–20 miles	
Over 20 miles	

13. How long does it currently take you to get to work?

Up to 15 minutes	
16–30 minutes	
31–60 minutes	
61–90 minutes	
Longer than 90 minutes	

14. Which of the following changes would encourage you to cycle to work?

Safer, better-lit work site cycle paths	
Improved cycle paths on the journey to work	
Improved cycle parking at workplace	
Workplace showers and changing facilities for cyclists	
Workplace lockers for cyclists	
Arrangements to buy a bicycle at a discount	
Other	
None	

15. Which of the following changes would most encourage you to use public transport for your journey to work?

More direct bus routes	
More frequent bus services	
More frequent train services	
Better lighting at bus shelters and workplace footpaths	
Discount tickets and passes available at work	
More convenient bus drop-off points	
Better bus links to work from the station	
Public transport information	
Other	
None	

16. Which of the following changes would most encourage you to walk to work?

Cleaner, better maintained workplace footpaths	
Better lighting on workplace footpaths	
More presence of security staff around the site	
More conveniently placed entrances to the site	
Road safety improvements in the local area	
Better street lighting in the local area	
Other	
None	

17. What are your main reasons for using a car to get to work?

Car essential to performing job	
Dropping/collecting children	
Get a lift	
Health reasons	
Personal security	
Lack of an alternative	
Other	

18. Where do you usually park?

At work site	
Free parking in nearby street	
Paid parking in nearby street	
Paid parking in commercial car park	

19. Would you be prepared to car share?

Yes	
No	
Already car share	

20. Which of the following would most encourage you to car share?

Help in finding car share partners with similar work patterns	
Free taxi home if let down by car driver	
Reserved parking for car sharers	
Reduced parking charges for car sharers	
Other	
None	

21. Do you have any comments about your travel to work?

Thank you for your co-operation. Please be assured that all answers will remain confidential.

AUDIT OF SITE RELEASES TO AIR AND WATER AND WASTE ARISING

Air pollution

1. Are air emissions produced at your site?

If yes, complete the table and questions below:

Type of emission (e.g. SO _x)	Activity (e.g. Boiler House)	Cite Legislation/Regulation/ Consent (e.g. LA APC)

- 2. Do you monitor your site's air emissions?
- 3. Who is responsible for managing your site's air emissions?
- 4. Do you have objectives and targets applicable to your site's air emissions?
- 5. Do you have documented procedures for identifying/monitoring and controlling air emissions?
- 6. Have you conducted training for air emission procedures?
- 7. Have you audited these procedures?
- 8. Do you have a site plan illustrating emission points?
- 9. Where is the site plan located/stored?

Water pollution

1. Does your site produce wastewater discharges? (other than sanitary waste)

If yes, complete the table and questions below:

Type of discharge (e.g. detergent)	Activity (e.g. vehicle wash)	Method of discharge (e.g. sewer)	Cite Legislation/ Regulation/ Authorisation consent (e.g. Water Authority; Water Industry Act)

- 2. Do you monitor wastewater discharges?
- 3. Who is responsible for managing your site's wastewater discharges?
- 4. Do you have objectives and targets applicable to your site's wastewater discharges?

5. Do you have documented procedures for identifying, monitoring and controlling wastewater discharges?
6. Have you conducted training for your site's wastewater discharge procedures?
7. Have you audited these procedures?
8. Do you have a site plan illustrating draining plans and discharge points?
9. Where is the site plan located/stored?
10. Is any wastewater discharged directly into controlled waters?
11. Is stormwater on your site discharged directly into controlled waters?
12. Is any wastewater treated on your site?

Solid and hazardous waste arisings

1. Do you/does your site produce/handle any:

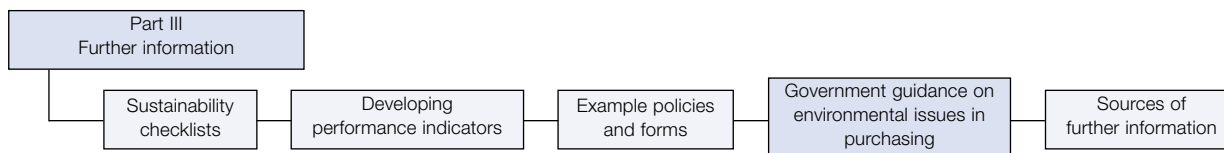
Waste	Arisings	Responsible officer
Solid waste		
Hazardous waste		
Special waste		
Clinical waste		

If yes, complete the table and questions below:

Type of waste (e.g. hazardous paint sludge)	Activity (e.g. paint spraying)	Method of disposal (e.g. waste contractor)	Cite Legislation/ Regulation/Licence (e.g. special waste regulations)

2. Do you monitor your site's waste streams?
3. Do you have objectives and targets applicable to your site's waste?
4. Do you have documented procedures for identifying, monitoring and controlling waste?
5. Have you conducted training for your site's waste management procedures?
6. Do you have a site plan of waste generation and storage points?
If yes, where?
7. Do you dispose of waste on your site?
If yes, where?
8. Do you treat waste on your site?
If yes, where?
9. Do you hold your own Waste Management Licence?
10. Do you have copies of Licences for your waste transporters or disposal sites?
11. Do you have a register of consignment/transfer notes?

13 HM Treasury and DETR guidance on environmental issues in purchasing



INTRODUCTION

13.1 The purpose of this paper is to provide guidance to Government departments, including their executive agencies and non-departmental public bodies, on environmental issues in purchasing. It has been produced jointly by HM Treasury and DETR.

POLICY

Procurement policy

13.2 All public procurement of goods and services, including works, is to be based on value for money (vfm), having due regard to propriety and regularity. Value for money in procurement is defined as “the optimum combination of whole-life cost and quality (or fitness for purpose) to meet the customer’s requirement”. The policy is set out in guidelines, which are available on the Treasury website:

<http://www.hm-treasury.gov.uk/guid.html>

13.3 The emphasis on whole-life costs means that departments are required to take account of all aspects of cost, including running and disposal costs, as well as the initial purchase price. The reference to “quality to meet the customer’s requirement” enables departments to specify what they need to meet their own operational and policy objectives while contributing to the Government’s objectives on environmental matters. Departments must, of course, satisfy themselves that specifications are justifiable in terms of need, cost effectiveness and affordability.

Environmental policy

13.4 The 1990 White Paper ‘This Common Inheritance’ committed each department to have a strategy in place for greening its operations. This should be adapted to meet each department’s circumstances, from the Government’s model framework for greening operations which was approved by Green Ministers in May 1998 – a copy of which is on the DETR’s website:

<http://www.environment.detr.gov.uk/greening/gghome.htm>

13.5 Among the model’s key aims are:

- conserving energy, water, wood, paper and other resources, particularly those which are scarce or non-renewable – while still providing a safe and comfortable working environment;
- reducing waste through re-use and recycling and by using refurbished and recycled products and materials where such alternatives are available;
- monitoring discharges and emissions to air, land and water to assess what action is necessary to reduce pollution or the risk of pollution;
- phasing out ozone-depleting substances and minimising the release of greenhouse gases, volatile organic compounds, vehicle emissions and other substances damaging to health and the environment;
- encouraging manufacturers, suppliers and contractors through specifications to develop environmentally preferable goods and services at competitive prices;
- ensuring that any products derived from wildlife such as timber, plants and leather goods are from sustainable sources, and comply with EU and international trading rules such as CITES (the Convention in International Trade in Endangered Species);
- working with contractors to improve environmental performance where this is relevant to the contract and to the achievement of vfm; and
- meeting all relevant current and foreseen statutory regulations and official codes of practice and specifying contractors to do the same when working on departmental premises.

Environmentally sensitive procurement

13.6 Drawing up specifications based on these criteria can contribute significantly to the achievement of Government targets for reducing the environmental impact of its activities. Although the aim must be to achieve vfm, not to further other policy aims, it should not be overlooked that legitimate requirements laid

down by Government purchasers can have an influence in assisting the development and use of goods and services which are less harmful to the environment.

THE EC PROCUREMENT RULES

13.7 Departments and other contracting authorities are required to comply with the EC procurement directives and the UK regulations that implement them. These apply to most contracts whose estimated value equals or exceeds specified thresholds.

13.8 They are also required to comply with the Treaty of Rome (for example on the free movement of goods and services and non-discrimination on grounds of nationality). The main ways in which these rules affect environmental considerations within the procurement process are:

- specifications – contracting authorities are free under the rules to specify their requirements in green terms. For example, departments may specify that a product should be made out of materials that are or could be recycled, or that particular materials, such as ozone-depleting substances, should not be used in the product. This is subject to the general rule that specifications must be drawn up in a manner which does not discriminate against products or providers from other Member States and which is, where applicable, consistent with the provisions in the directives on technical specifications and the use of standards;
- selection of tenderers – the UK regulations set out detailed criteria for the selection of tenderers based on evidence of their personal position, their economic and financial standing, their technical capacity and, for services, also their ability. The nature of the evidence that may be requested with regard to technical capacity is exhaustive, so evidence of other factors may not be taken into account. In particular, questions about providers' general policies (for example on environmental issues) are not permitted. Purchasers are allowed to reject candidates who have been convicted of a criminal offence or who have committed an act of grave misconduct in the course of their business where they consider rejection to be justified. This may include infringement of environmental legislation/regulations. However, care should be taken to ensure that decisions to reject providers are proportionate to the offence and that the provider is given an opportunity to describe any steps it might have taken to prevent recurrence. Care should also be taken to ensure that providers are treated equally;
- award of contract – only two criteria are permitted: either various criteria including whole-life costs for determining which offer is “the most economically

advantageous” to the purchaser (that is, best value for money) or “lowest price” alone;

- contract conditions – as a matter of community law, purchasers can attach conditions to the award of contracts provided these conditions are compatible with the Treaty of Rome. In brief, this means that the conditions must be equally capable of being met by providers in all Member States. However, the UK's domestic policy of not using procurement to achieve other policy ends limits the extent to which departments may have recourse to “contract compliance” – as the imposition of contractual conditions is commonly known. An example of an acceptable contract condition might be, “While working on the department's premises the contractor will comply as far as possible with the department's green strategy.”

SPECIFYING REQUIREMENTS

13.9 The procurement process will normally start with the definition of the business need by the end user. From this, a user requirement or specification will be drawn up. In preparing the specification the end user should decide the extent to which it should cover environmental requirements, taking account of:

- the Government's environmental policies and the department's own strategy for greening its operations;
- the resources available to the department;
- the requirement to achieve vfm (see [paragraph 13.14](#)); and
- the EC procurement directives and the Treaty as appropriate.

PROCURING GOODS AND SERVICES

13.10 The departmental purchaser's role is to respond to the end user's needs in the normal way. The purchaser will need:

- to be fully aware of the department's environmental strategy;
- to be able to challenge a specification to ensure that full account is taken of the purchaser's knowledge of the market and professional skills and experience;
- to ensure that where the EC procurement directives apply, they are followed appropriately – for example in framing the specification, in selecting tenders and in awarding contracts; and
- to ensure that the requirements of the Treaty of Rome are complied with.

ACCOUNTABILITY

13.11 The Accounting Officer is accountable to Parliament through the Public Accounts Committee for the department's decisions on purchasing and the expenditure arising from them, and will need to be able to demonstrate that value for money has been obtained. The Minister in charge of each department is also accountable to Parliament for the department's strategy for greening Government operations, including taking account of environmental factors in purchasing. (In practice, the department's Green Minister, where different, will normally answer on these matters.)

VALUE FOR MONEY

13.12 Examples of the factors that need to be considered in assessing whole-life costs include:

- running costs such as the energy or water consumed by the product over its lifetime;
- indirect costs – for example, less energy-efficient IT equipment will produce more heat causing the plant in air-conditioned buildings to work harder to remove it, so adding to the electricity bill;
- administrative costs – for example, the use of a more expensive product which is less harmful to the environment may reduce the time spent by staff in complying with the Control of Substances Hazardous to Health (COSHH) Regulations;
- investing to save revenue costs (“spend to save” measures) – for example, specifying higher levels of insulation where the extra expenditure can be recouped from lower energy costs;
- not generally insisting on new items when refurbished parts or products could be used;
- recyclability – for example, purchasers can create markets for their own waste such as paper, toner cartridges etc, by buying products containing recycled materials; furthermore, a recycled product, for example a refurbished toner cartridge, may cost less than a new one. Purchasers should, however, look to waste reduction and re-use as well as recycling (see [paragraph 13.24](#)); and
- the cost of disposal arrangements – for example, it may be worth paying a premium to a supplier giving an undertaking to remove the product or a hazardous substance at the end of its useful life.

13.13 Departments should also consider risk factors, for example:

- the advantages of reducing their risks under COSHH and the Duty of Care on Waste Management (under Section 4 of the Environment Protection Act 1990) –

for example by choosing benign rather than hazardous materials; and

- the risk of investing in redundant plant and equipment as increasingly stringent environmental standards are imposed through EU and UK legislation, allied with increasingly vigilant enforcement.

13.14 Buying green may often cost less, taking proper account of factors such as these. However, cases may arise where the specification of a particular environmental requirement results in higher costs that will not be offset by savings over the longer term. Departments are accountable for their expenditure and, therefore, will need to determine whether the extra cost is justified. The justification may be that Ministers have decided collectively as a matter of policy that the Government should not buy a particular substance or material on the grounds that it is harmful to the environment. Otherwise, it will be for the purchasing department to judge whether the premium is justified after taking into account the department's own policy statement on greening operations. In formulating such requirements it will, of course, be necessary to strike a proper balance between the costs of the requirement to the taxpayer and the environmental benefits. However, that is a matter of prudent financial management generally, rather than specifically one of procurement policy.

13.15 At the tender evaluation stage the costs and benefits of the competing bids should be evaluated in the normal way to establish which of the bids meeting the specification offers the best value for money. The contract should be awarded accordingly.

13.16 Departments should not seek to use their purchasing power as a means of pursuing wider environmental ends (that is, those outside the scope of the contract). For example, while a department is free to specify paper made out of recycled materials, it should not limit its field of selection to providers who only supply recycled paper. The unwarranted rejection of suppliers capable of meeting the specification could lead to both a loss of value for money and a breach of the EC rules.

13.17 The award of contracts should not be made subject to criteria or conditions of an environmental nature, which are not directly relevant to the product or service being procured. However, departments will need to ensure that they discharge their statutory obligations – for example under the “Duty of Care”, below.

OTHER ISSUES

Substantiating environmental claims

13.18 Purchasers should be wary of unsubstantiated claims and environmental marks which have no formal recognition. Some typical phrases are:

- “environmentally friendly” – meaningless if unexplained;
- “comes from managed forests” – virtually all forests used for paper-making are managed, but some are managed in ways that are strongly criticised by environmentalists; and
- “kinder to wildlife” – again, meaningless if unexplained.

13.19 Further guidance on these issues is given in the Government’s ‘Green Claims Code’.

Environmental Management Schemes

13.20 Formal standards for environmental management systems are now in place, which assure purchasers that suppliers are operating to control their environmental impacts. Companies can obtain certification for their environmental management systems under ISO 14001 or the Eco-Management and Audit Scheme (EMAS). More information on both schemes, but particularly on ISO 14001, is given in DETR’s guide to ‘Implementing Environmental Management Systems in Government’.

13.21 EMAS and ISO 14001 are voluntary schemes promoted by the Government. However, it is not the Government’s policy to require its suppliers to comply with them as a condition of selection to tender or award of contract. Such a condition could lead to higher prices by restricting those eligible to compete for orders and contracts and could conflict with the EC rules on selecting providers. It is, however, permissible to ask suppliers to provide evidence that they are able to operate an environmental management scheme where it is relevant to the contract; for example for the provision of a facilities management service in an organisation accredited to – or seeking accreditation to – ISO 14001.

Life-cycle assessment and eco-labelling

13.22 Few organisations can afford to conduct detailed life-cycle (or whole-life) assessments on all their products because of the technical expertise and resources required to produce meaningful results. This is where the EC eco-labelling scheme can help. It provides rigorous standards for certain product groups, which are based on a full analysis of life-cycle impacts and agreed at European level. However, the scheme is voluntary and therefore it does not follow that eco-labelled products necessarily perform better in environmental terms than

non eco-labelled products. Accordingly, invitations to tender and contract documents should not require products to carry the label or any other non-mandatory label. However, the eco-label criteria may be used to identify environmentally preferable products and to improve the specification for products and services.

Energy labelling schemes

13.23 Purchasers who wish to identify products in the most energy-efficient categories should use the European Union’s mandatory energy labelling scheme.

Waste minimisation strategy

13.24 The aim of the strategy, set out in the Government’s consultation paper ‘Less waste, more value’, is to reduce the amount of waste produced. Failing that, value should be recovered from the waste and only if that is not an efficient solution should the waste be disposed of – by means that minimise risk to the environment and to human health. The options for waste management are ranked by merit of their relative benefits:

- reduce;
- re-use;
- recover (that is, recycling, composting and energy recovery); and
- dispose.

13.25 Purchasers should focus their attention on the top of the hierarchy when making their purchasing decisions. For example, which products are likely to cause the least waste? Which can be re-used? Or, which can be recycled? Making the right decision – taking into account vfm – can help departments meet their targets for reducing waste.

Duty of Care – waste disposal

13.26 Departments are reminded of their responsibilities under Section 34 of Part II of the Environmental Protection Act 1990, which places a Duty of Care on anyone who produces or holds controlled waste.

Producer responsibility initiative for packaging waste

13.27 Purchasers should buy recycled products in support of this initiative, wherever they provide vfm. The initiative is designed to put an increased share of responsibility on suppliers to make productive use of the materials in their products (and the packaging around them) once they have served their original purpose. The aim is to reduce packaging, and create markets for recycled materials by making greater use of them in packaging and products.

Receipt from sales

13.28 Departments may enter into contracts with companies that re-use or recycle waste, provided they follow Government rules on the treatment of receipts.

FURTHER GUIDANCE

13.29 Further information may be obtained from the following websites:

- DETR, for the model framework for Greening Government operations:
<http://www.environment.detr.gov.uk/greening>
- HM Treasury for general procurement policy and practice guidance :
<http://www.hm-treasury.gov.uk/guid.html>

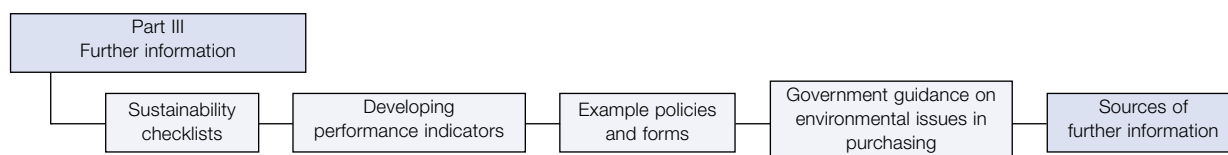
13.30 Enquiries should be addressed to:

Mike Davis, PPU, HM Treasury.
e-mail: mike.davis@hm-treasury.gov.uk
Tel. 0207 (GTN) 270 1551 (Fax 1653)

or

Mike Acheson, DETR.
e-mail: mike_acheson@detr.gov.uk
Tel. 0207 (GTN) 3533 3067 (Fax 3059)

14 Sources of further information



A wide range of information on the planning, design and management of healthcare estates is available from NHS Estates (publications lists can be downloaded from <http://www.nhsestates.gov.uk/knowledge/publications.html>). Here are a few sources of information that can be used to provide further detail to that available from NHS Estates.

PLANNING

Government departments

DETR

Eland House, Bressenden Place, London SW1E 5DU. Tel. 020 7944 3000. <http://www.detr.gov.uk>

- *Planning policy guidance (PPG) notes*. Addresses a range of planning issues; and
- *Planning for sustainable development: towards better practice*.

DoH

Richmond House, Whitehall, London SW1. Tel. 020 7210 4850. <http://www.doh.gov.uk>

- *Capital Investment Strategy for the Department of Health*. Outlines some of the planning issues to be considered when proposing capital investments.

NHS Estates

1 Trevelyan Square, Boar Lane, Leeds LS1 6AE. Tel. 0113 254 7000. <http://www.nhsestates.gov.uk>

- *Developing an Estate Strategy: Modernising the NHS*. Provides useful information for evaluating the effectiveness of existing NHS estate and the development of strategies for estate improvement.

Other organisations

Improvement and Development Agency (I&DeA), formerly the Local Government Management Board

Layden House, 76–86 Turnmill, London EC1 M 5QU. Tel. 020 7296 6600. <http://www.idea.gov.uk>

- *Sustainable settlements: a guide for planners, designers and developers*

The Countryside Agency (incorporating the Rural Development Commission)

London Office, Dacre House, 19 Dacre Street, London SW1H 0DH. Tel. 020 7340 2900. <http://www.countryside.gov.uk/index.htm>

DESIGN

The following organisations can provide useful information on the sustainable design of buildings.

Building Research Establishment (BRE)

Garston, Watford WD2 7JR. Tel. 01923 664000. <http://www.bre.co.uk>

The BRE runs a number of specialist programmes aimed at providing further information on sustainable design, including:

- Design advice service – provides advice on energy-efficient and environmentally conscious design of new buildings and on refurbishment projects. Clients are offered a one-day consultancy on their chosen building.
- Centre for Sustainable Construction – has developed the BREEAM building appraisal tool and the *Green guide to specification*. The centre is also working on the development of a project-level key performance indicator for sustainability.

- Building Research Energy Conservation Support Unit – runs the Energy Efficiency Best Practice Programme (EEBPP) which provides a huge range of free information on the use of energy-efficient technologies and practices. NHS Estates is currently working with BRECSU to develop an Environmental Assessment Tool (NEAT) for considering new hospital design and construction. This will be available in September 2001.

Building Services Research and Information Association

Old Bracknell Lane West, Bracknell, Berkshire RG12 7AH. Tel. 01344 426511. <http://www.bsria.co.uk>

Provides a wide range of information on the design and specification of energy-efficient and environmentally conscious building services.

Royal Institute of British Architects (RIBA)

66 Portland Place, London WN1 4AD. Tel. 020 7222 9430. <http://www.riba.org.uk>

RIBA has working groups looking at both sustainability in design and design for healthcare. They produce a number of information sheets on environmentally conscious and sustainable design.

The Parliamentary Renewable and Sustainable Energy Group

4th Floor, 35 Grosvenor Gardens, London SW1W 0BS. Tel. 020 7233 5887.

Association for Environment Conscious Building

Nant-y-Garreg, Saron Llandysul, Carmarthenshire SA44 5EJ. Tel. 01559 370908.

<http://www.aecb.net>

CONSTRUCTION

The following organisations can provide useful information on sustainable construction processes.

DETR Sustainable Construction Team

Eland House, Bressenden Place, London SW1E 5DU. Tel. 020 7944 3000. <http://www.detr.gov.uk>

- *Building a better quality of life: a strategy for more sustainable construction*

Construction Best Practice Programme (CBPP)

PO Box 147, Bucknalls Lane, Garston, Watford WD2 7RE. Tel. 0845 605 5556.

Raises awareness of the benefits of best practice in management and business process and signposts sources of help and advice to give organisations and individuals the knowledge and skills to implement change.

Construction Industry Research and Information Association (CIRIA)

6 Storeys Gate, Westminster, London SW1P 3AU. Tel. 020 7222 8891. <http://www.ciria.org.uk>

CIRIA provides technical advice on construction processes and have a range of literature on environmentally conscious construction.

- Construction Industry Environment Forum (CIEF): managed by CIRIA with the BRE and BSRIA, the CIEF provides a network for information exchange on sustainability themes within the construction industry. Regular events include meetings, workshops and site visits.

Construction Confederation

PO Box 75, Great Amwell, Ware SG12 9UY. Tel. 01920 872837. <http://www.thecc.org.uk>

The Construction Confederation administers the Considerate Constructors Scheme on behalf of the Construction Industry Board.

OPERATIONAL ACTIVITIES

The following organisations can provide useful information on healthcare facility operational activities.

Environmental Management Systems

NHS Estates

1 Trevelyan Square, Boar Lane, Leeds LS1 6AE. Tel. 0113 254 7000. <http://www.nhsestates.gov.uk>

- *Strategic guide to environmental policy*, 1992;
- *Environmental Management in Healthcare*, 1995 (Health Facilities Note 11).

The NHS Estates website also gives an overview of environmental management issues.

DETR

Eland House, Bressenden Place, London SW1E 5DU. Tel. 020 7944 3000. <http://www.detr.gov.uk>

DETR provides guidance on EMS in the form of a 'Model Improvement Programme' which sets out the areas in which Government departments can set objectives and targets for improved environmental performance.

Consultancy Support

The Environment Agency in conjunction with DETR, and sponsored by the I&DeA, has set up a Government Framework Agreement (NATCON 280) which enables Government departments, agencies, and non-departmental public bodies access to consultancy support for environmental management systems from two selected firms of environmental consultants (Entec UK Ltd and WS Atkins). More information regarding the work covered by this contract and taking advantage of the lessons learnt across Government to date can be gained from the DETR's website.

SIGMA

The British Standards Institute, Forum for the Future and the Institute of Social and Ethical Accountability are working together on the development of sustainability management systems under the SIGMA project. More information on SIGMA can be found at <http://www.projectsigma.com>

Energy efficiency

Building Services Research and Information Association

Old Bracknell Lane West, Bracknell, Berkshire RG12 7AH. Tel. 01344 426511. <http://www.bsria.co.uk>
(see under Design, above.)

Building Research Establishment (BRE)

Garston, Watford WD2 7JR. Tel. 01923 664 000. <http://www.bre.co.uk>
In particular the EEBPP (see under Design, above.)

Centre for Alternative Technology

The Quarry, Machynlleth, Powys SY20 9AZ. Tel. 01654 702400. <http://www.cat.org.uk>

Waste management and minimisation

DETR

Eland House, Bressenden Place, London SW1E 5DU. Tel. 020 7944 3000. <http://www.detr.gov.uk>

The DETR publishes a wide range of material on effective waste minimisation and management, including:

- *Waste Management – the duty of care*, available from The Stationery Office.

NHS Estates

1 Trevelyan Square, Boar Lane, Leeds LS1 6AE. Tel. 0113 254 7000. <http://www.nhsestates.gov.uk>

- *Healthcare Waste Minimisation: a compendium of good practice*

The Environmental Technology Best Practice Programme (ETBPP)

Helpline: Tel. 0800 585 794. <http://www.etbpp.netgates.co.uk> See also <http://www.envirowise.gov.uk>

Provides free advice and guidance on implementing cost-effective measures to improve environmental performance by reducing waste at source. The ETBPP produces audited case studies of a wide range of companies that have already reduced waste. Initially, callers receive telephone advice, but this may be followed up by a site visit if necessary.

Institute of Wastes Management

9 Saxon Court, St Peters Gardens, Northampton NN1 1SX. Tel. 01604 620426. <http://www.iwm.co.uk>

Represents the waste management industry and provides a forum for discussion of waste management topics.

Green travel/transport

NHS Estates

1 Trevelyan Square, Boar Lane, Leeds LS1 6AE. Tel. 0113 254 7000. <http://www.nhsestates.gov.uk>

NHS Estates has produced a Green Travel Plan covering its activities. It can be obtained by e-mailing Lorraine Brayford at lorraine.brayford@doh.gsi.gov.uk.

DETR

Eland House, Bressenden Place, London SW1E 5DU. Tel. 020 7944 3000. <http://www.detr.gov.uk>

- *A travel plan resource pack for employers*
- *The benefits of green transport plans*, June 1999; and
- *Developing an effective travel plan – advice for Government departments*, January 2000.

New car fuel consumption and CO₂ emissions figures are produced by the Vehicle Certification Association, on behalf of DETR, twice yearly.

Environmental Technology Best Practice Programme

Helpline Tel. 0800 585 794. <http://www.etbpp.netgates.co.uk> See also <http://www.envirowise.gov.uk>

- *A travel plan resources pack for employers – an essential guide to developing, implementing and monitoring a travel management strategy for your organisation*; and
- *Fuel efficient fleet management*.

Annual events include:

- Green Transport Week and National Car Free Day on 10–18 June and 22 September respectively – run by the Environmental Transport Association (<http://www.eta.co.uk>, or call 01932 828882).

The Association for Commuter Transport (ACT)

Tel. 0208 741 1516. <http://www.act-uk.com/index.asp>

Edinburgh Chamber of Commerce and Enterprise

Tel. 0131 477 7000.

- *The way to work: a guide to implementing green commuter plans*.

Improvement and Development Agency (I&DeA), formerly the Local Government Management Board

Layden House, 76–86 Turnmill, London EC1 M 5QU. Tel. 020 7296 6600. <http://www.idea.gov.uk>

- Local agenda 21 roundtable guidance – planning transport and sustainability; see <http://www.la21-uk.org.uk>

Transport 2000

Walkden House, 10 Melton Street, London NW1 2JE. Tel. 020 7388 8386.

Co-ordinates the Healthy Transport Network for NHS trusts and health authorities with the aim of reducing journeys to healthcare facilities.

- *Changing journeys to work: an employer's guide to green commuting plans*; and
- *The healthy transport toolkit: a guide to reducing car trips to NHS facilities*.

The National Society for Clean Air and Environmental Protection (NSCA)

Tel. 01273 326313. <http://www.nasca.org.uk>

Holds regular discussion groups/seminars on air quality, and green transport-related topics.

The Home Office Partnership

<http://www.flexibility.co.uk/telecommuting2000/index.htm>

- *Telecommuting – information on the future of transport in the information age*.

Society of Motor Manufacturers and Traders

Tel. 020 7841 5469. <http://www.stopfuming.co.uk>

Offers advice on how to minimise emissions from cars and runs the “Stop Fuming” campaign.

PROCUREMENT**NHS Purchasing and Supply Agency**

Provides advice and undertakes central purchasing for the health service.

Contact Andy Davey, on 0118 980 8633 or andy.davey@doh.gsi.gov.uk.

DETR

Eland House, Bressenden Place, London SW1E 5DU. Tel. 020 7944 3000. <http://www.detr.gov.uk>

There are numerous Government (DETR) guidelines on green procurement, including for IT equipment (selecting PCs which power down if not used for 30 minutes) and stationery, which are a useful source of information.

- *Green guide for buyers: Part 1*, and *The green buyer's checklist*;
- *Towards more sustainable construction: a green guide for managers on the Government estate*; and
- *Environmental issues in purchasing*. Treasury-DETR Note.

Building Research Establishment (BRE)

Garston, Watford WD2 7JR. Tel. 01923 664000. <http://www.bre.co.uk>

The Centre for Sustainable Construction publication *BREEAM 98 for Offices* provides a checklist of considerations for procuring sustainable building services.

The Chartered Institute of Purchasing and Supply (CIPS)

Easton House, Easton on the Hill, Stamford, Lincolnshire PE9 3NZ. Tel. 01780 756777. <http://www.cips.org>

Produces general guidance on purchasing issues, including supply chain management and the consideration of environmental factors.

HM Treasury – the Government Construction Clients' Panel (GCCP)

Bridghe Forde, HM Treasury, Procurement Group, Allington Towers, 19 Allington Street, London SW1P 5EB. Tel. 020 7270 1624. <http://www.hm-treasury.gov.uk/gccp/index.html>

The GCCP produces a number of publications and guidance on construction procurement including:

- *Achieving sustainability in construction procurement*.

PARTICIPATION

Department of Health

Richmond House, Whitehall, London SW1. Tel. 020 7210 4850. <http://www.doh.gov.uk>

Runs a number of information and advice services accessible from its website, including:

- Our Healthier Nation;
- NHS Beacons; and
- Health Action Zones.

Improvement and Development Agency (I&DeA), formerly the Local Government Management Board

Layden House, 76–86 Turnmill, London EC1M 5QU. Tel. 020 7296 6600. <http://www.idea.gov.uk>

Provides advice on Local Agenda 21 initiatives and liaison with other public services.

Institute of Social and Ethical Accountability

Thrale House, 44–46 Southwark Street, London SE1 1UN. Tel. 020 7407 7370. <http://www.AccountAbility.org.uk>

Provides a wide range of technical and resource information on best practice for consulting and engaging communities and others.

Appendix A – List of abbreviations

BEMS	Building Energy Management Systems
BRE	Building Research Establishment
BRECSU	Building Research Energy Conservation Support Unit
BREEAM	Building Research Establishment Environmental Assessment Method
BSRIA	Building Services Research and Information Association
BUG	Bicycle User Group
CBPP	Construction Best Practice Programme
CHP	Combined Heat and Power
CIRIA	Construction Industry Research and Information Association
CITES	Convention on International Trade in Endangered Species
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
COSHH	Control of Substances Hazardous to Health
DETR	Department of the Environment, Transport & the Regions
DTI	Department of Trade and Industry
ECF	Elemental chlorine free
EEBPP	Energy Efficiency Best Practice Programme
EMS	Environmental Management System
EMAS	EcoManagement and Audit Scheme
EPA	Environmental Protection Act 1990
ETBPP	Environmental Technology Best Practice Programme
Gj	Gigajoules
GP	General Practitioner
HFN	Health Facilities Note
HGN	Health Guidance Note
HM C&E	Her Majesty's Customs and Excise
HSC	Health Service Circular
HSS	Health and Social Services

HTM	Health Technical Memorandum
IDeA	Improvement and Development Agency
ISO	International Standards Organisation
LA21	Local Agenda 21
LPA	Local Planning Authority
LPG	Liquefied Petroleum Gas
M4i	Movement for Innovation
m ³	Cubic metres
MWe	Mega Watts electrical
NEAT	NHS Environmental Assessment Tool
NGO	Non-governmental Organisation
NHS	National Health Service
NOx	Oxides of nitrogen
PFI	Private Finance Initiative
PM ₁₀	Particulate matter below 10 microns in size
PPG	Planning Policy Guidance notes
PSD	Passive Solar Design
TCF	Totally chlorine-free
vfm	Value for money
VDU	Visual Display Unit
WHO	World Health Organisation

Appendix B – List of some relevant legislation

Following is a list of some of the environmental and health and safety legislation which is relevant to the operations of NHS facilities. Further information on these requirements can be obtained from the DETR website (<http://www.environment.detr.gov.uk/greening/register/index.htm>).

Air Quality Regulations 1997

Anti-Pollution Works Regulations 1999

Carriage of Dangerous Goods by Road Regulations 1996

Carriage of Substances (Classification, Packaging Labelling) and Use of Transportable Pressure Receptacles Regulations 1996 (CDGCPL2)

Clean Air Act 1993

Collection and Disposal of Waste Regulations (SI 819) 1988

Control of Pollution Regulations 1996

Control of Substances Hazardous to Health Regulations 1999 (COSHH)

Controlled Waste Regulations 1992

Environment Act 1995

Environment Protection Regulations 1991

Environmental Information Regulations (SI 1992/3240) 1992

Environmental Protection (Controls on Substances that Deplete the Ozone Layer) Regulations (SI 1996/506) 1996

Environmental Protection Act 1990.

Environmental Protection Regulations 1996

Groundwater Regulations (SI 2746) 1998

Health and Safety at Work etc Act 1974

Landfill Tax Order 1996

Landfill Tax Regulations 1996

National Health Service and Community Care Act 1990

Packaging Producer Responsibility Regulations 1997

Planning (Hazardous Substances) Regulations 1992

Pollution Prevention and Control Regulations (England & Wales) 2000

Special Waste (Amendment) Regulations 1997 (SI 1997/251)

Special Waste Regulations 1996

Town and Country Planning (Environmental Impact Assessment) (England & Wales) Regulations (SI 1999/293) 1999

Town and Country Planning Act 1990

UK Environmental Protection (Non-Refillable Refrigerant Containers) Regulations SI 1994/199 (made under SI40 EPA 1990)

Waste Management Licensing Regulations 1994

Water Industry Act 1991

Water Resources Act 1991

Water Supply (Water Fittings) Regulations 1999

Wildlife and Countryside Act 1981

Appendix C – References

ACTS AND REGULATIONS

The Environment Act 1995. The Stationery Office, 1995.

(http://www.legislation.hmso.gov.uk/acts/acts1995/Ukpga_19950025_en_1.htm)

Environmental Protection (Duty of Care) Regulations (SI 1991/2839). The Stationery Office, 1991.

(http://www.legislation.hmso.gov.uk/si/si1991/Uksi_19912839_en_1.htm)

Special Waste Regulations (SI 1996/972). The Stationery Office, 1996.

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See also <http://www.hmso.gov.uk/si/si1997/97025101.htm> for the Special Waste (Amendment) Regulations 1997.

DEPARTMENT OF THE ENVIRONMENT, TRANSPORT AND THE REGIONS

A better quality of life: a strategy for sustainable development for the United Kingdom. Department of the Environment, Transport and the Regions, The Stationery Office 1999.

(<http://www.environment.detr.gov.uk/sustainable/quality/index.htm>)

Building a better quality of life: a strategy for more sustainable construction. Department of the Environment, Transport and the Regions, 2000.

(<http://www.construction.detr.gov.uk/cirm/sustainable/bql/index.htm>)

Egan, Sir John. **Rethinking construction: the report of the construction Task Force to the Deputy Prime Minister, John Prescott, on the scope for improving the quality and efficiency of UK construction.**

Department of the Environment, Transport and the Regions, 1998.

(<http://www.construction.detr.gov.uk/cis/rethink/index.htm>)

Environmental issues in purchasing (PPC(G)99/3). Procurement Policy Committee, HM Treasury and Department of the Environment, Transport and the Regions, 1999.

(<http://porch.ccta.gov.uk/treasury/reports.nsf>)

Green Claims Code. Department of the Environment, Transport and the Regions, 1998.

(<http://www.environment.detr.gov.uk/gcc/index.htm>)

Greening Government operations. Department of the Environment, Transport and the Regions, 2000.

(<http://www.environment.detr.gov.uk/greening/greenpro/greenpro.htm>)

Green guide for buyers. Department of the Environment, Transport and the Regions, 1999.

(<http://www.environment.detr.gov.uk/greening/greenpro/greenpro.htm>)

Guidelines for environmental risk assessment and management: revised departmental guidance.

Department of the Environment, Transport and the Regions, with the Environment Agency and the Institute for Environment and Health, 2000.

(<http://www.environment.detr.gov.uk/eramguide/index.htm>)

Guidance on enhancing public participation in Local Government. Department of the Environment, Transport and the Regions, 1998.

(<http://www.local-regions.detr.gov.uk/epplg/index.htm>)

A new deal for transport – better for everyone: the Government's White Paper on the future of transport.

Department of the Environment, Transport and the Regions, The Stationery Office, 1998.

(<http://www.detr.gov.uk/itwp/paper/index.htm>)

Planning for sustainable development: towards better practice. Department of the Environment, Transport and the Regions and Ove Arup and Partners, The Stationery Office, 1998.

Planning policy guidance: general policy and principles (PPG 1). Department of the Environment, Transport and the Regions, The Stationery Office, 1997.

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Planning policy guidance: town centres and retail developments (PPG 6). Department of the Environment, Transport and the Regions, The Stationery Office, 1996.

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Planning policy guidance: transport (PPG 13). Department of the Environment, Transport and the Regions, The Stationery Office, 1994. (new edition in preparation)

(<http://www.databases.detr.gov.uk/planning/npp/PubDetail.asp?thisPub=PPG13>)

Quality of life counts. Department of the Environment, Transport and the Regions, 1999.

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Sustainable development: the UK strategy. Department of the Environment, The Stationery Office, 1994.

Waste management: the duty of care: code of practice. Department of the Environment, The Stationery Office, 1996.

Waste strategy 2000 for England and Wales. Department of the Environment, Transport and the Regions, The Stationery Office, 2000.

(<http://www.environment.detr.gov.uk/waste/strategy/cm4693/index.htm>)

The UK climate change programme. Department of the Environment, Transport and the Regions, The Stationery Office, 2000.

(<http://www.environment.detr.gov.uk/climatechange/cm4913/index.htm>)

This Common Inheritance: Britain's Environmental Strategy. Department of the Environment, The Stationery Office, 1990.

DEPARTMENT OF HEALTH

Capital investment strategy for the Department of Health. Department of Health, 1999.

The healthy transport toolkit: a guide to reducing car journeys to health facilities (HSC 1998/181).

Department of Health, 1998.

(<http://www.doh.gov.uk/publications/coinh.html>)

The New NHS: modern, dependable. Department of Health, The Stationery Office, 1997.

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