

Sustainability

Achieving Excellence in Construction Procurement Guide



01 02 03 04 05 06 07 08 09 10

11



Contents

The Achieving Excellence Procurement Guides	3
Introduction	4
Principles	4
Sustainability and the project procurement lifecycle	8
Sustainability and business justification	9
Sustainability and the procurement process	17
Developing the sustainable design	32
The sustainable construction process	39
Management and operation of the sustainable facility	47
The sustainable disposal and re-use of the site	52
Further information	55

NAO endorsement

The NAO recognise that proactive client leadership and robust project management are prerequisites to the successful delivery of construction procurement.

They consider that procurement of construction should be on the basis of whole-life value for money and endorse the use of the good practice promoted by this suite of guides. They may investigate whether this good practice is applied in practice in any future examination.

Acknowledgements

This guide has been published after extensive consultation within government and valuable contributions from leading individuals and organisations across the construction industry.

OGC would like to thank all who have contributed.

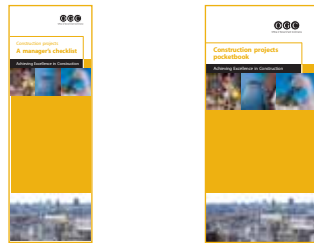
© Crown Copyright 2007

The Achieving Excellence Procurement Guides

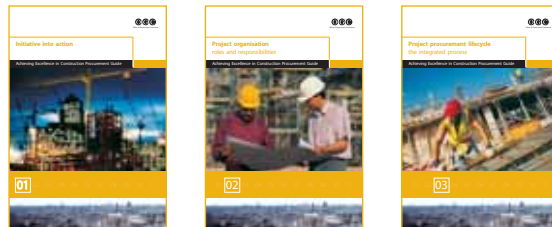
The *Achieving Excellence* suite of procurement guides replaces the *Construction Procurement Guidance Notes* series.

The new series reflects developments in construction procurement over recent years and builds on government clients' experience of implementing the *Achieving Excellence in Construction* initiative.

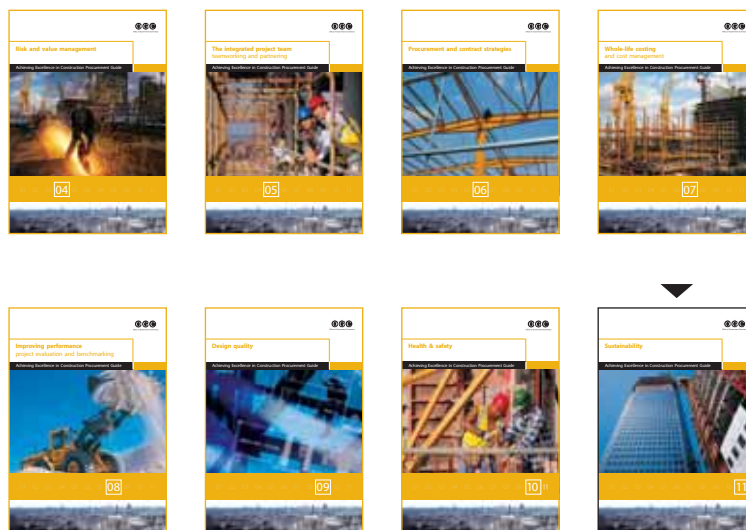
High level guides



Core guides



Supporting guides



11 Sustainability

Introduction

Why sustainability is an issue

The built environment has a major impact on our lives.

Construction can affect communities and businesses and can make heavy demands on limited natural resources. When planned successfully it can also lead to positive outcomes.

The Government recognises this and is committed to addressing these issues in order to achieve the delivery of sustainable development in the United Kingdom.

How to use this guide

This guide highlights the importance of sustainable development. It sets out the processes by which the public sector client can procure and deliver construction projects that best promote sustainable development while still achieving optimum whole life value for money. Its aim is to encourage thorough consideration of sustainable development and to illustrate the ways in which sustainable construction can be delivered.

The issues it covers apply to all construction projects: be they the construction elements of PFI projects, the procurement of serviced facilities or traditional construction projects.

This guide¹ covers the sustainable development issues that should be considered at each key decision-making stage – from preparing the initial business case, to operating and decommissioning the completed facility. It is designed to help clients to identify the standards that they wish to aim for in their projects.

Each section comprises an introduction and a table. The table sets out the major issues that need to be considered at each stage and points the client towards sources of further information.

Principles

Definition

What is Sustainable Development?

Sustainable Development is the achievement of a better quality of life through the efficient use of resources, which realise continued social progress while maintaining stable economic growth and caring for the environment.

¹AE11: supports the government's commitment to sustainable development through the procurement of sustainable construction projects and builds on the progress made by the 'Achieving Sustainability in Construction Procurement Plan' which was published by the Government Construction Clients Panel (GCCP) during June 2000. The Estates Management and Construction section of Defra's 'Framework for Sustainable Development on the Government Estate' mandates the guidance laid out in AE11:Sustainability.

It has been defined in many ways by many authors. Another recognised definition is:

*"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."*²

Overview and background

The UK Government underlined its commitment to sustainable development in its 1999 publication *A Better Quality of Life: A Strategy for Sustainable Development for the UK*.³

This strategy identified four main aims:

- Social progress, which recognises the needs of everyone
- Effective protection of the environment
- The prudent use of natural resources
- Maintenance of high and stable levels of economic growth and employment.

Decisions concerning the built environment can have a fundamental impact on these issues. The Government recognises that it has a duty as a major client of the construction industry to embrace sustainability through all its property and construction processes: from new developments and small-scale refurbishments through to the management and operations of its estate.

To deliver a construction product that encourages and supports a better quality of life, the process must take account of social, economic and environmental objectives in a balanced way.

In 2000 the Government established its strategy⁴ for more sustainable construction. This suggested ten key action themes that would encourage the development of sustainable construction within the construction industry:

- Re-use existing built assets
- Design for minimum waste
- Aim for lean construction
- Minimise energy in construction
- Minimise energy in use
- Do not pollute
- Preserve and enhance biodiversity
- Conserve water resources
- Respect people and local environment
- Set targets - i.e. monitor and report, in order to benchmark performance.

While these actions are mainly focused on the environment, they are also a useful starting point in considering the broader issues that affect the construction project lifecycle.

²*Our Common Future: The UN World Commission on Environment & Development, Dr Gro Harlem Brundtland, 1987*

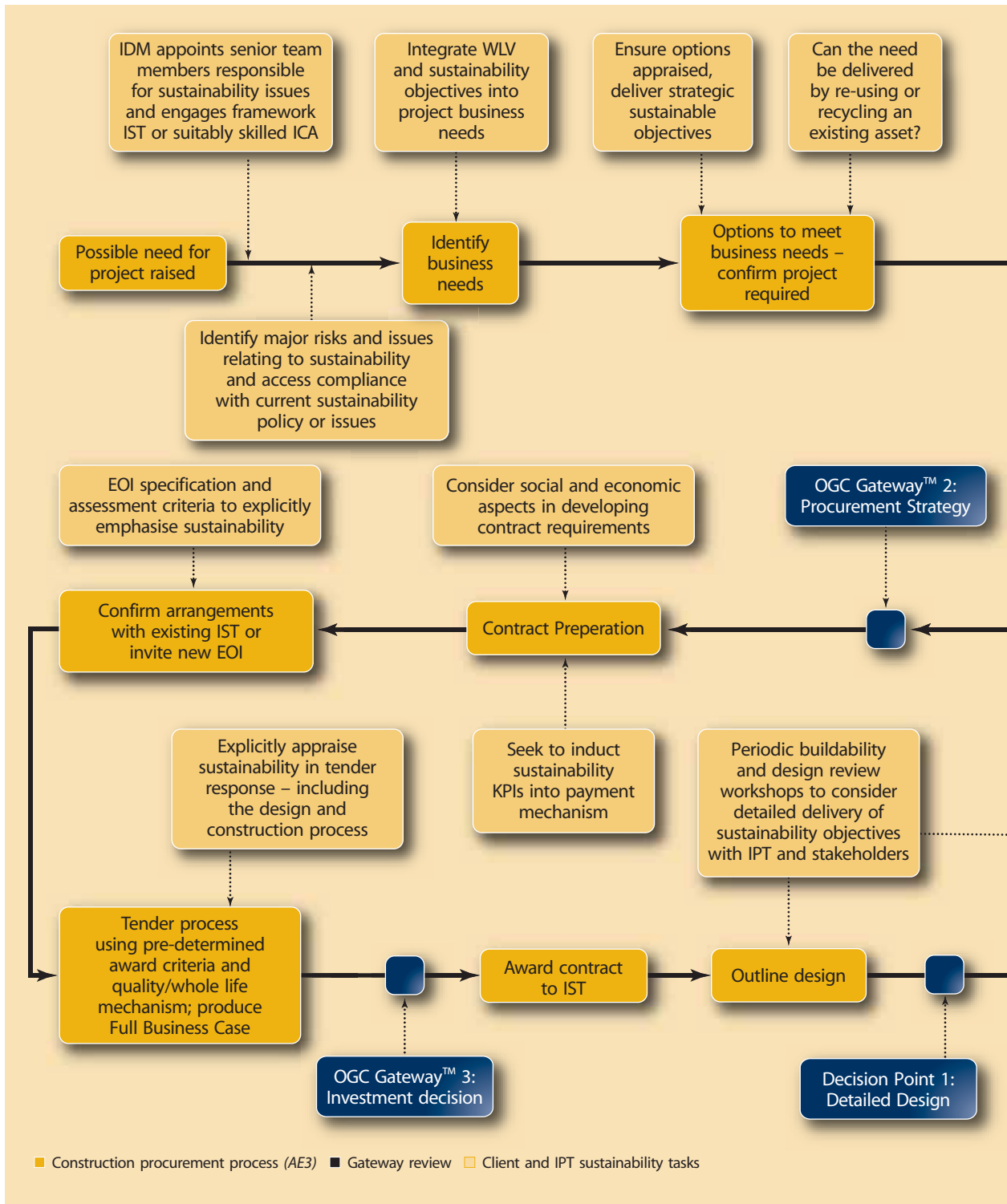
³*Defra has recently developed a new sustainable strategy for the UK*

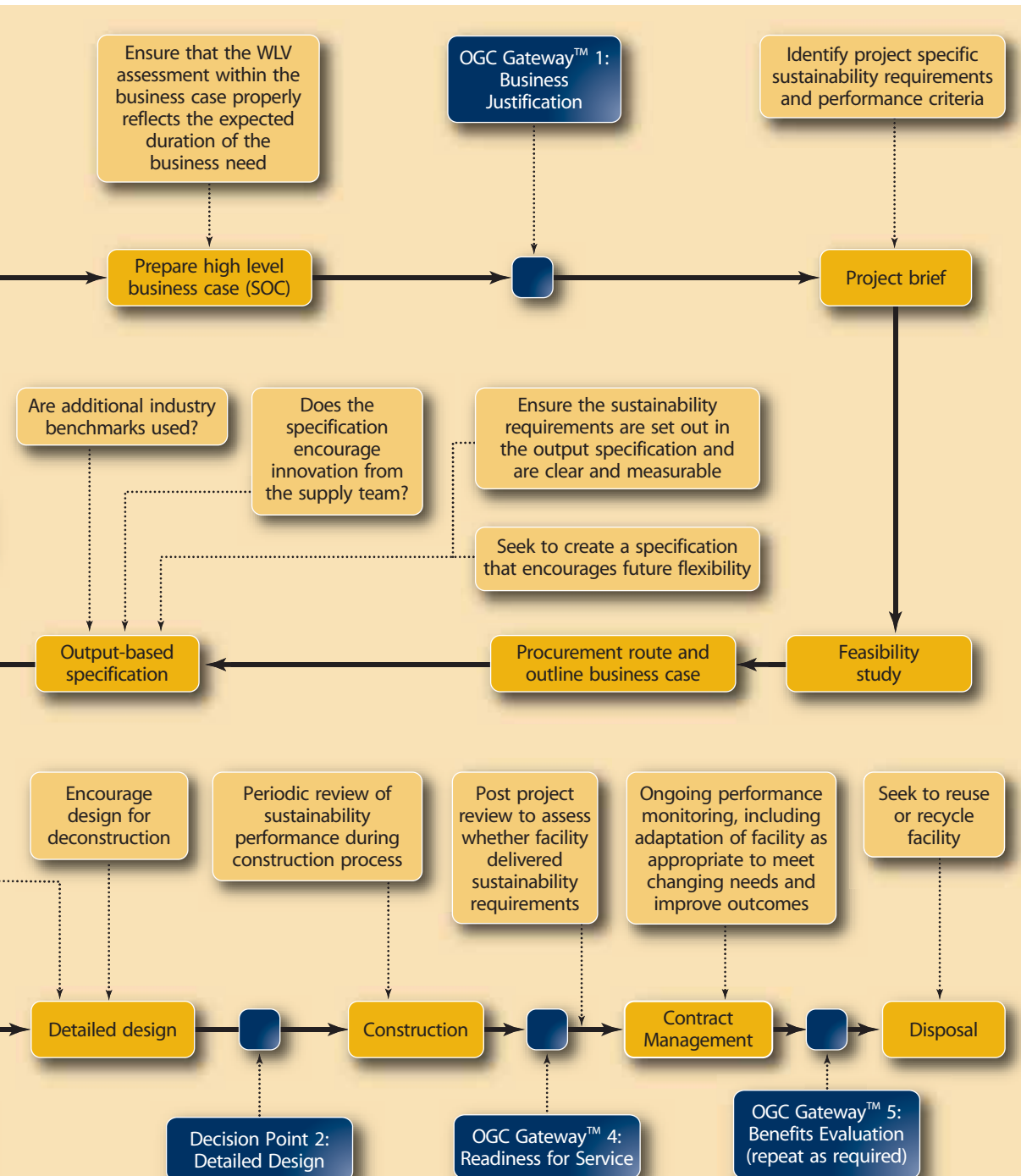
⁴*Building A Better Quality of Life – A Strategy for More Sustainable construction DETR April 2000*



11 Sustainability

1 Framework for sustainable construction procurement





11 Sustainability

Project Procurement Lifecycle

Sustainability and the project procurement lifecycle

The framework for Sustainable Construction Procurement

This guide takes the project procurement life-cycle as its base and focuses on the key social, economic and environmental factors that should be addressed during the lifecycle.

While the aim of the guide is to give the client an informed overview, it does allow for individual interpretation according to the nature of the project. It is expected that specialists may need to be consulted where appropriate.

The Lifecycle Approach⁵

The project procurement lifecycle considers the whole life of a project from inception through to design and construction, operation and finally re-use or disposal.

It is a process which identifies where and when key decisions are to be made and determines the critical outputs that should be delivered at each stage of the project.

The project procurement lifecycle encompasses the following critical phases:

- Business justification
- Project brief and Procurement Process
- Design brief
- Construction process
- Operation and management
- Disposal and re-use.

This process can be used as a framework to deliver a sustainable solution – one that satisfies the social, economic and environmental aspects of sustainable development. Figure 1 outlines the main sustainability management requirements during a construction project.

The Three Pillars of Sustainability

All sustainability decisions involve balancing seemingly conflicting needs across what is known as 'The Three Pillars of Sustainability'. These pillars take account of the specific requirements and constraints of a particular project.

The three pillars are:

■ Social sustainability

This identifies the needs of individuals and considers their well-being. In the context of construction, social sustainability is often the least considered area but it has the potential to bring the most benefits. It covers a wide range of issues from health and safety, education and training through to social inclusion and eradicating poverty

⁵Full details of the project procurement lifecycle are given in the 'Achieving Excellence in Construction Procurement Guide 03: Project Procurement Lifecycle'.

■ Economic sustainability

This focuses on the importance of stable economic growth. It means working within the capacity of the natural environment, adopting measures from fair and rewarding employment through to competitiveness and trade

■ Environmental sustainability

The most recognised of the three pillars. This is concerned with protecting and conserving both biodiversity and the environment, by reducing waste, preventing pollution and using water – and other natural resources – as efficiently as possible.

Sustainability and business justification

The importance of making a business case

Defining a business case establishes the need for the project. An effective business case sets out the range of solutions that would meet the business objectives and justify the proposed project. This includes whether the delivery of a construction project, or of a service, is the most appropriate way to meet the business need.

Questions around sustainability must be an integral part of this process. Examining these issues will help the project team identify the range of options and deliver the best value whole-life solution – one that not only meets the business need but also makes informed decisions about the feasibility and nature of the project.

Key issues that should be considered in the development of the business case include:

- Whether construction is the best solution to meet a recognised business need
- The impact that alternative service, delivery and construction options have on the effectiveness and efficiency of the business operation
- The impact the options (in delivering and operating the facility) will have on the stakeholders – including staff and the local community, as well as the social, economic and environmental impacts of the various options.

Best practice: some examples

The 'Sustainability Appraisal Handbook for the MOD Estate' details a process that allows sustainable development objectives to be integrated into policies, programmes and project activities.

In addition, Building Research Establishment's (BRE) 'Sustainability Checklist for Developments' gives useful guidance and advice as well as a framework for achieving a sustainable development. It provides a structured approach to considering all aspects of sustainable development from the economic to the environmental and social.

OGC detailed guidance on developing a Business case can be found at www.ogc.gov.uk/business_case_high-level_business_case.asp and www.ogc.gov.uk/documentation_and_templates_business_case.asp



11 Sustainability

Business Justification

A typical business case

The business case is typically developed in three main stages:

- **A preliminary business case:** this sets out a high level view of the business need and justifies the business decision
- **The outline business case:** which provides more detail about the business need and a rigorous appraisal of options
- **The full business case:** which provides accurate information to allow investment decisions to be made.

Key points

- Before a project can proceed, the IDM (Investment Decision Maker) must approve the full business case and agree the investment
- The business case should be reviewed at each key decision stage of the project
- This will provide the foundation for the post project review to check whether business objectives and benefits have been realised.

*The following table highlights the key areas of sustainability that should be considered during the development of the business case. Each area is identified together with a series of questions or steps for action, a brief description of the key issues and a reference to further information. Web links to these areas in the OGC Website are provided within the electronic version of AE11 that can be found at www.ogc.gov.uk/documents/CP0016.pdf

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Business Justification: Economic		
Whole-life costing (WLC) and value for money		
<ul style="list-style-type: none"> ■ Assessments should be carried out on a whole-life cost basis. <ul style="list-style-type: none"> ■ Is construction the best choice? ■ Can the business need be delivered in a different way? ■ Have the options and cost assessments been undertaken for refurbishment versus new build? 	<p>New developments are a considerable investment. The decision to undertake a new development should not be taken unless it is the most cost effective way of meeting the business need.</p> <p>A whole-life cost assessment should be used to evaluate all procurement decisions.</p>	<p>BRE: Whole Life Cost Comparator <i>Calculates the whole life costing of building.</i></p> <p>The Office Scorer <i>Compares the cost of major or complete refurbishment with complete redevelopment, and redevelopment within an existing facade.</i></p>

What you should consider...	Why/how you should consider it...	Tools and information to help you*
		<p>Achieving Excellence in Construction Procurement Guide 07: Whole-life Costing <i>Advice on basing decisions on a whole-life cost approach.</i></p>
<p>Economic Regeneration</p> <ul style="list-style-type: none"> ■ How will it affect the local economy? 	<p>Carefully planned new developments can rejuvenate local economies by: improving access to services, encouraging new businesses and creating new jobs.</p> <p>Successful economic regeneration relies on engaging with all stakeholders.</p> <p>The Government's commitment for sustainable communities reinforces the need for flourishing local economies, supported by adequate infrastructure.</p>	<p>ODPM: Creating Sustainable Communities <i>Sets out a long-term plan for delivering sustainable communities in urban and rural areas.</i></p> <p>Local Government Association's Economic Regeneration: documenting best practice <i>Best practice examples promoting economic regeneration.</i></p>
<p>Function</p> <ul style="list-style-type: none"> ■ The project should offer flexibility and ability to adapt to future changes. 	<p>The business case should consider: the needs of the current user and be flexible enough to accommodate future users.</p>	
<p>Investment and Project Delivery</p> <ul style="list-style-type: none"> ■ Whole-life costing must be assessed against the benefits that will be delivered – higher whole life costs may deliver greater business benefits <ul style="list-style-type: none"> ■ Is the project affordable? 	<p>Implementing a sustainable strategy can generate specific business benefits, including: cost savings (through lower energy consumption) and reduced disposal and material purchasing costs.</p> <p>A good working environment can lead to greater productivity and reduced staff turnover.</p>	<p>Constructing Excellence <i>Provides advice and best practice examples.</i></p>



11 Sustainability

Business Justification

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Business Justification: Environmental		
Location Greenfield/Brownfield		
<ul style="list-style-type: none"> ■ Has consideration been given to utilising a brown field site? ■ If so are there any issues of contamination? ■ Are there any planning issues? ■ Has an Environmental Impact Assessment/Site Appraisal been carried out? 	<p>Preference should always be given to developing brown field sites (ie previously developed land and buildings). This eases pressure on the green belt.</p> <p>Government has set targets to encourage the regeneration of brown field sites – for example that 60% of new homes should be built on brown field sites.</p> <p>English Partnerships’ study ‘Towards a National Brownfield Strategy’ (November 2003) highlights the huge potential to recycle brown field sites for future developments.</p> <p>The business case should explicitly justify any decision to build on a green field site location.</p>	<p>Environment Agency’s Scoping Guidelines for the Environmental Impact Assessment of Projects <i>Considers the likely effect a project will have on the environment and encourages early liaison with stakeholders.</i></p> <p>ODPM’s Guide to Environmental Impact Assessments <i>Provides an introduction and information on the main procedural stages.</i></p> <p>CIRIA’s Guide to Building on Brownfield Sites (C578) <i>Lists the benefits of building on brown field sites and offers advice on how to deal with legal, financial and technical issues.</i></p>
Transport Infrastructure		
<ul style="list-style-type: none"> ■ How is the area currently serviced? ■ Are public services readily available? ■ Is the development reliant on energy intensive forms of transport? ■ Is there an infrastructure in place to support the community? ■ How would the project impact on the current infrastructure? ■ Has a Transport Impact Assessment been carried out? 	<p>Transport is central to the location of any development.</p> <p>New developments should minimise the need to travel by private car and make the best use of public transport, walking and cycling.</p>	<p>DfT’s Walking and Cycling – An Action Plan <i>The Government’s plan for increasing levels of walking and cycling in England.</i></p>

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Biodiversity		
<ul style="list-style-type: none"> ■ Has a detailed survey and environmental impact assessment been undertaken? ■ Does the development create opportunities to enhance green spaces and nature conservation? ■ Are there planning conditions relating to biodiversity? 	<p>Biodiversity considers all living things and their habitats. Anyone involved in a new development has a duty to conserve and enhance biodiversity, through good design and landscaping.</p> <p>Any development should seek to retain, enhance, or create features of nature conservation and must avoid threats to Sites of Special Scientific Interest (SSSI).</p>	<p>The UK Biodiversity Action plan <i>Incorporates local action plans, searchable by region, providing details for example on notable species.</i></p> <p>Green Ministers Biodiversity Checklist <i>A checklist detailing the actions departments can take to manage and promote biodiversity on their estates.</i></p> <p>CIRIA (C587) Working with Wildlife <i>A resource and training pack for construction professionals focusing on understanding and implementing good practice in relation to local ecology and construction projects.</i></p>
Energy and Water		
<ul style="list-style-type: none"> ■ Will the development actively contribute to the Government's targets to reduce emissions of CO2 ■ Will the development use energy efficiently? ■ How will the development impact on local gas and distribution networks? ■ How will the development impact on the local sewerage system? 	<p>A long-term perspective should be applied when examining the effects a development has on: local water and energy supplies, as well as the wider environment and climate change.</p> <p>New developments should be located in zones where there is little or no risk of flooding.</p>	<p>Energy Efficiency: The Government's Plan for action <i>Sets out how the Government aims to cut carbon emissions by an extra 12 million tonnes through energy efficiency.</i></p> <p>ODPM'S guidance on Preparing for floods <i>Chapter 4 contains helpful information for new development.</i></p> <p>Environment Agency's Online Flood Library <i>Provides various guidance and information on flooding.</i></p>



11 Sustainability

Business Justification

What you should consider...	Why/how you should consider it...	Tools and information to help you*
<ul style="list-style-type: none"> ■ Can the local water supply cope with additional demand from the development? ■ Will the development pose risks to water pollution? ■ Is the location subject to flooding? If it is the project should avoid adding to the risk of flooding or seek to minimise it 	<p>If that isn't feasible, then flood risk should be considered at all stages of the planning and development process to reduce loss of property and life while mitigating against any further impacts to the environment.</p>	

Business Justification: Social

Stakeholders		
<ul style="list-style-type: none"> ■ The local community should be consulted during the decision-making process. ■ Have their needs been identified and taken into consideration? 	<p>A successful project provides for the needs of the local community. Local people must be fully engaged in the design and development process.</p> <p>If the proposed development location is in a rural area, government must take account of the likely impact this could have on the local environment and community.</p> <p>The 'Rural Proofing Checklist' is not only part of the formal policy making process, it is also a useful tool that can be applied in the early planning stages of a development.</p> <p>Stakeholders have an interest in ensuring that a development (and those who carry it out) act in a socially and environmentally responsible way.</p>	<p>Achieving Excellence Guide 02: Project Organisation Roles and Responsibilities. <i>Explains the key roles and responsibilities involved in construction procurement projects and identifies where stakeholder involvement fits into the framework and who should take responsibility for the management.</i></p> <p>The Countryside Agency's Rural Proofing Checklist <i>This is a screening tool, designed to help policy makers take account of rural circumstances and needs.</i></p>

What you should consider...	Why/how you should consider it...	Tools and information to help you*
	<p>Engaging with stakeholders can help provide solutions to problems, avoiding unnecessary disputes or delays. The following list indicates those who are affected by, or who could affect, a construction project:</p> <ul style="list-style-type: none"> ■ Local community ■ General public ■ End users ■ Local and national government ■ Interested Organisations ■ Client, project team and contractors ■ Investors ■ Facility managers. 	<p>CIRIA (C627) Engage <i>A client's guide to introducing key social issues that need to be considered during construction projects.</i></p>
<p>Culture/Heritage</p> <ul style="list-style-type: none"> ■ The project should enhance or preserve the existing culture and heritage and should address any negative visual impact. <ul style="list-style-type: none"> ■ Will the project be sympathetic to the local styles of architecture? ■ Is there a possibility of uncovering archaeological remains? ■ Are there planning constraints in place? 	<p>The Government has an extensive historic estate and is committed to conserving and maintaining this heritage.</p> <p>When refurbishing a historic building, or a surrounding historic landscape, the client should aim for the highest standards of conservation.</p> <p>New developments should be in keeping with the culture and heritage of the area and reflect the context in which they sit.</p>	<p>DCMS' Protocol for the Care of the Government Historic Estate 2003 <i>Should be followed when refurbishing historic buildings and areas of historic interest.</i></p> <p>English Heritage and CABE's report on Building in Context – New Development in Historic Areas <i>Highlights projects that have taken place in historically sensitive areas.</i></p>



11 Sustainability

Business Justification



Case Study

Culture/Heritage: Respecting Heritage

HM Treasury: 1 Horse Guards Road

During 2004 the Treasury Building (previously known as GOGGS) a Grade II* listed Edwardian building was redeveloped to support the demands of a 21st century business. The refurbishment of the west end of the building took place between 2000 and 2002 and the second half (now occupied by Revenue and Customs) took place between 2002 and 2004.

When built, GOGGS was regarded as one of the most important new public buildings in London since Sir Charles Barry's Palace of Westminster, completed over half a century earlier, in 1852. Its historical and architectural significance was officially recognised in 1970 when it was listed Grade II*, placing it within the top 6-7% of all listed buildings in terms of importance. Special mention was made of the classical elevations, the towers and the Circular Court.

By working closely with English Heritage the project team were able to successfully meet the challenge by developing an efficient, value for money project that delivered essential improvements to the building fabric and the working environment for staff while respecting the historical and environmental aspects of a significant London landmark. English Heritage now regards the project as an exemplar.

In addition to its architectural importance, politically and historically GOGGS has acquired a symbolic status for the role it played during the Second World War. Partly because of the building's robust construction it was chosen as a suitable home for Churchill and his wartime Cabinet between 1940 and 1945. The D-Day Invasion of Normandy in June 1944 was planned in the Cabinet War Rooms (CWR) below the West Court.

As part of the 1 Horse Guards Road design, considerable additional space was made available for the extension of the CWR Museum, where exhibits explain the pivotal role of the building's occupants during the Second World War. Although refurbishment involved significant work below ground, this was achieved without significant impact on operation of the CWR as a major tourist attraction in Whitehall.

Source: HM Treasury

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Business Justification: Social		
<p>Health and Safety</p> <ul style="list-style-type: none"> <li data-bbox="164 723 496 891">■ Appropriate resources should be allowed for within the business case to comply with Government policy on Health and Safety. <p data-bbox="512 723 847 925">Health and Safety concerns not only the safety and well-being of occupants in and around a facility but also the welfare of employees working within the construction industry.</p> <p data-bbox="512 943 847 1111">From the start of a project the client must ensure both the facility itself and the construction site comply with Health and Safety regulations.</p> <p data-bbox="871 723 1190 891">Achieving Excellence in Construction Procurement Guide 10: Health and Safety <i>Guidance on how to achieve excellence in health and safety.</i></p>		

Sustainability and the procurement process

In brief: the procurement process

The procurement process consists of:

- The establishment of the procurement route
- Finalising tender documents including the project brief and the output based specification
- The tender selection process for an integrated supply team.

The project brief: clear, explicit and measurable

The project brief sets out the vision, strategy and requirements of the project.

The project brief must clearly highlight the importance of sustainability considerations to the client to ensure that all parties involved in the project are conscious of the client's needs and requirements.

Before beginning the tender process, the client must develop the project brief into an output-based specification that defines the objectives that they wish to achieve but not how these should be met.

Within this, the client must set out those objectives which are considered essential and those which are desirable. This specification must include the sustainable performance objectives for the project – covering both the construction and operation of the facility – so that prospective tenderers can fully respond to these requirements.



11 Sustainability Procurement Process

Equally, it is vital to assess which risks are more appropriately managed by the client and which by the supply team and to develop the detail of the specification taking this analysis into account.

If the project includes a service element – for example under PFI or a design, build and operate arrangement – clients should seek to place responsibility for operational costs (for example energy usage) with the supply team.

Alternatively, ‘pain-gain’ share arrangements can be used – adding an incentive to generate operational efficiencies.

In PFI projects, consideration should also be given on performance against key sustainability measures. This can be incorporated in the key performance indicators, against which unitary charges are calculated.

Tenderers should also be asked to provide full details of how they will respond to the required sustainability objectives. The importance of this element in the tender appraisal process should be made clear.

This will encourage tenderers to suggest innovative approaches and alternatives that offer better value for money and/or whole-life cost performance. As part of the tender evaluation process the client should explicitly appraise the responses to the sustainability criteria defined within the tender documentation. This appraisal should also consider the supply team’s knowledge and experience of sustainable projects.

The ‘Achieving Excellence in Construction Procurement Guide 5: The Integrated Project Team’ provides further information to support the assessment process. It is important that the supply team’s suitability is assessed against sustainability criteria in a clear and methodical manner. Thought must be given to the structure of the tender evaluation process at the time of scripting the tender documentation.

*The following table highlights the key areas of sustainability that should be considered during the development of the project brief and the output based specification. Each area is identified together with a series of questions or steps for action, a brief description of the key issues and a reference to further information. Web links to these areas in the OGC Website are provided within the electronic version of *AE11* that can be found at www.ogc.gov.uk/documents/CP0016.pdf

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Procurement Process: Economic		
Whole Life Costing/Value for Money		
<ul style="list-style-type: none"> ■ Tender documents should emphasise the importance of whole-life costs in delivering a value for money, sustainable project. ■ Project briefs should clearly set out the benefits the facility is intended to deliver and should seek to link their delivery to supply team rewards. <ul style="list-style-type: none"> ■ In a long-term (eg PFI) concession does the contract ensure that the residual asset value at the end of the concession reflects overall whole-life costing constraints? 	<p>There should be no confusion about what the project needs to deliver.</p> <p>The brief must contain a clear statement that defines the whole-life objectives and purpose of the project.</p> <p>This must consider not just the initial costs of construction but also the lifetime costs of the facility.</p> <p>Costs and business benefits should be quantified for each phase of the facility's lifecycle and optimised wherever possible without sacrificing quality.</p>	<p>Achieving Excellence in Construction Procurement Guide 07: Whole-Life Costing</p> <p><i>Explains how to manage costs throughout the lifetime of a facility.</i></p>



11 Sustainability

Procurement Process

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Procurement Process: Environmental		
Biodiversity		
<ul style="list-style-type: none"> ■ A requirement for a Biodiversity Management Plan (for both current development and long term management) should be included in the brief. ■ Has a biodiversity interest been identified on the site? 	<p>An investigation of the site will have identified any nature conservation issues. The brief should clearly make reference to these.</p> <p>The brief must also include a statement of the client's commitment to preserving and enhancing biodiversity.</p> <p>The client should set the standards they want to achieve in terms of biodiversity and how performance will be measured throughout the lifecycle of the project.</p> <p>A Biodiversity Management Plan – should encompass the following:</p> <ul style="list-style-type: none"> ■ Consultation and scoping study ■ Detailed surveys and impact assessment ■ Design of development to incorporate biodiversity objectives ■ Enhancement, mitigation and compensation ■ Management and aftercare. 	<p>Design for Biodiversity <i>A guide for developments in London – but its principles apply to all projects.</i></p> <p>Earthwatch's Business and Biodiversity <i>A guide to developing a site Biodiversity Action Plan.</i></p> <p>The Wildlife Trust's Biodiversity Benchmark <i>A structured and independent process to assess an organisation's impact on the natural environment.</i></p>

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Energy		
<ul style="list-style-type: none"> ■ The brief should define targets for energy consumption during construction and in operation and how they will be monitored. ■ The brief should identify minimum requirements for energy performance for both new facilities and major renovations. <ul style="list-style-type: none"> ■ Will the brief include the requirement to procure only buildings in the top quartile of energy performance for the Government Estate? 	<p>Facilities consume large quantities of energy throughout their life cycle and make large contributions to carbon dioxide emissions. Facilities should be designed within the context of functionality to minimise energy use and reduce pollution.</p> <p>The client should define targets for actual energy consumption, seeking to gain reductions over the life of the project.</p> <p>The client should set out how performance levels will be determined and measured.</p> <p>Key Performance Indicators (KPIs) should be used to benchmark performance.</p> <p>In a PFI project, suppliers should be encouraged to introduce energy efficient solutions. Some, or all, of the responsibility for energy consumption should be given to the private sector.</p>	<p>Constructing Excellence: Environment KPIs <i>Information on the Environment KPI 2003 Wall chart, which contains graphs of performance for 10 key environmental issues for construction.</i></p> <p>Energy Efficiency: The Government's Plan for Action <i>The Government's commitment to deliver over 12 million tonnes of additional carbon savings through energy efficiency.</i></p> <p>The Carbon Trust <i>Information on Energy performance and Benchmarks.</i></p>
Water		
<ul style="list-style-type: none"> ■ The brief should include targets, and how they will be monitored, for water consumption both during construction and when the facility is in operation. 	<p>More efficient use of water – without lowering the level of service – helps lower costs and reduces both pollution and health risks. End users should be educated on how to conserve water.</p> <p>The Watermark project was established in 2000 to develop benchmarking and management information on water consumption across the public sector. It has played a significant role in improving monitoring of water consumption across Government.</p>	<p>OGCbuying.solutions Watermark Website <i>contains industry news, advice and benchmarking information from the Watermark project.</i></p> <p>Constructing Excellence: Environment KPIs <i>Information on the Environment KPI 2003 Wall chart, which contains graphs of performance for 10 key environmental issues for construction.</i></p>



11 Sustainability

Procurement Process

What you should consider...	Why/how you should consider it...	Tools and information to help you*
	<p>Although funding for the project has now ended, it still collates data for any organisation or site that wishes to submit it. It also offers services that relate to the conservation of water.</p> <p>The brief should include performance outputs in-line with the Watermark scheme and current departmental targets on water consumption.</p> <p>The client should seek to define targets for actual water use and should if possible seek to gain reductions over the life of the project.</p> <p>The client should set out how performance levels will be determined and measured. Key Performance Indicators (KPIs) should be used to benchmark performance.</p>	

Procurement Process: Environmental

Waste Minimisation and Management		
<ul style="list-style-type: none"> ■ A requirement for suppliers/ contractors to provide a Waste Management Plan should be included in the brief. ■ Targets should be specified for re-use/recycling during construction and in operation and how they will be monitored. 	<p>Construction generates huge quantities of waste. It places extra pressure on landfill sites.</p> <p>Occasionally that waste is disposed of illegally through fly tipping and burning which can cause pollution and health hazards.</p> <p>There is a need to reduce the amount of waste the construction industry generates through recycling, reusing and reducing.</p> <p>Effective waste management during construction and in operation of a facility helps to protect the environment and generate significant savings.</p>	<p>Waste and your Duty of Care <i>The duty of care is a law, which says that you must take all reasonable steps to keep waste safe.</i></p> <p>DTI's Site Waste Management Plans <i>Guidance for Construction Contractors and Clients.</i></p> <p>Constructing Excellence: Environment KPIs <i>Information on the Environment KPI 2003 Wall chart, which contains graphs of performance for 10 key environmental issues for construction.</i></p>

What you should consider...	Why/how you should consider it...	Tools and information to help you*
	<p>The brief should outline waste minimisation targets and how performance will be monitored and assessed.</p> <p>The client should seek to define targets for reducing waste and should set out how performance levels will be determined and measured.</p> <p>Key Performance Indicators (KPIs) should be used to benchmark performance.</p>	
<p>Materials</p> <ul style="list-style-type: none"> ■ The brief should include a requirement to use materials that contribute to the sustainability goals the project is aiming to achieve. <p>Examples include:</p> <ul style="list-style-type: none"> ■ Use of preferred standards ■ Re-use of materials that can be recycled or reclaimed on-site ■ Avoidance of environmentally damaging materials ■ Use of natural/crop derived materials ■ Avoidance of materials that are potentially harmful to humans. 	<p>Some materials used in construction can damage the environment: they can create pollution, while others are produced in an energy intensive process.</p> <p>Reclaimed materials and products made from recycled material are less likely to cause environmental damage.</p> <p>It is important that materials should be judged on their lifecycle and their performance once they are installed.</p> <p>If the client has a preference it should be clearly indicated in the brief.</p>	<p>National Non-Food Crops Centre <i>The National Centre for expertise and information on non-food uses of crops.</i></p> <p>Salvomie <i>Is a low value and waste construction/landscape materials information exchange.</i></p> <p>WRAP <i>Reference information on products, specifications and good practice to support the implementation of requirements for recycled content.</i></p>



11 Sustainability

Procurement Process

What you should consider...	Why/how you should consider it...	Tools and information to help you*
<ul style="list-style-type: none"> ■ The brief should include an outcome-based requirement for overall materials efficiency, such as a minimum requirement for recycled content in the project. ■ The brief should state that any timber procured is from a managed or sustainable forest, in-line with government policy. 	<p>The European Commission's Handbook on environmental public procurement (SEC (2004) 1050, August 2004) identifies the right of a contracting authority 'to demand a minimum percentage of recycled or re-used content where possible'.</p> <p>The Government's Sustainable Procurement Group recommends a minimum requirement such as '10% of the materials value of the project should derive from recycled or re-used content'.</p> <p>This requirement defines the outcome for the overall project (not per product) and gives contractors the flexibility to determine the most cost-effective means of compliance.</p> <p>By stimulating demand for recovered materials, such a requirement will increase diversion from landfill and make recycling more economic.</p>	<p>Defra's Timber Procurement Advice Note: January 2004 <i>New procedure for purchasing legal and sustainable timber.</i></p>

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Procurement Process: Environmental		
Pollution (Air, Noise, Land and Water)		
<ul style="list-style-type: none"> The brief should define targets to minimise or reduce pollution where possible. 	<p>Developments should avoid polluting the atmosphere, land or water-course. Emissions can damage the local environment as well as the health of construction workers and the local community.</p> <p>Risks should be identified and a plan to mitigate potential sources of pollution should be stated in the brief.</p> <p>The client should seek to define targets for minimising pollution and should set out how performance levels will be determined and measured.</p> <p>Key Performance Indicators (KPIs) should be used to benchmark performance.</p>	<p>BRE's Pollution Control Guides <i>Suggest ways of controlling and reducing emissions during construction and demolition.</i> <i>The books are available from the BRE Bookshop</i></p> <p>Constructing Excellence: Environment KPIs <i>Information on the Environment KPI 2003 Wall chart, which contains graphs of performance for 10 key environmental issues for construction.</i></p> <p>CIRIA (C502) Environmental Good Practice On Site <i>Guidance on how to avoid causing environmental damage and the financial penalties that can follow.</i></p>
Environmental Performance Standard		
<ul style="list-style-type: none"> The brief should include a requirement for use of a performance measurement target such as Building Research Establishment Environmental Assessment Method, EcoHomes, Civil Engineering Environmental Quality Assessment and Award Scheme or equivalent. 	<p>A project's performance should be assessed against set criteria to provide a benchmark against which the project team can deliver to an industry-wide standard.</p> <p>Government Policy requires that all building projects should carry out an environmental assessment using BREEAM (or an equivalent).</p> <p>New build projects should achieve an 'excellent' rating and refurbishment projects should achieve at least a 'very good' rating.</p>	<p>BREEAM <i>A UK based assessment standard for high environmental performance in buildings, promoting more sustainable construction and development.</i></p> <p>CEEQUAL <i>An awards scheme, which assesses the environmental quality of civil engineering projects.</i></p> <p>EcoHomes <i>The version of BREEAM developed for homes, promoting the development of high environmental performance for new, converted or renovated homes.</i></p>



11 Sustainability

Procurement Process



Case Study

Waste: Recycling

Defence Estates: Single Living Accommodation Modernisation Programme (SLAM)

In 2003, the Government's Sustainable Procurement Group recommended setting requirements for the use of recycled materials in major Government construction projects. Subsequent work by WRAP suggested that a recycling content of 10% of the materials value of a construction project was readily achievable.

The barracks building programme SLAM has been shown to outperform this level by almost a factor of two. The standard design of new barracks uses nearly 20% of recycled and recovered materials and opportunities have been identified which could increase this figure to nearly 25% with no increase in cost or risk. This change would create demand for an additional 67,000 tonnes of material across the SLAM programme that might otherwise have gone to landfill or low-value uses.

The SLAM results indicate that, by restricting the analysis to higher-value items and focusing on well-known product areas, the cost of demonstrating compliance with a specific percentage requirement can be kept to a minimum.

Source: Waste and Resources Action Programme (WRAP)

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Procurement Process: Environmental		
Government Standards		
<ul style="list-style-type: none"> The brief should take account of government or departmental strategy and targets. 	<p>Since 1999 the Government has reported on the environmental impact of its Estate – which covers 20 central Departments and their Executive Agencies.</p> <p>Defra's Framework for Sustainable Development on the Government Estate has set some cross-government targets (e.g. on energy and estates management). These targets have an important role to play in delivering improvements in performance and are backed up by monitoring.</p>	<p>Defra's Framework for Sustainable Development on the Government Estate <i>The main vehicle for improving the sustainable performance of the Government Estate.</i></p> <p>OGC/Defra Joint Note on Environmental Issues in Purchasing <i>Provides guidance to public buyers on how to integrate sustainable development issues into the procurement process.</i></p>

What you should consider...	Why/how you should consider it...	Tools and information to help you*
	<p>The client should take account of the contribution the brief will make to departmental targets.</p>	
Procurement Process: Social		
Respect for people		
<ul style="list-style-type: none"> ■ Does the brief encompass the principles of the Respect for People programme? 	<p>The Respect for People toolkit addresses six 'action themes':</p> <ul style="list-style-type: none"> ■ Equality and Diversity in the Workplace ■ Working Environment ■ Health ■ Safety ■ Career development and Lifelong Learning ■ Worker Satisfaction. <p>The Toolkits in combination with the Respect for People Performance Indicators help organisations benchmark their performance against the UK construction industry.</p> <p>The client should look to appoint suppliers that fully support these values.</p>	<p>Constructing Excellence Respect for People Information and Toolkit <i>The Respect for People programme focuses on showing respect to the construction industry's workforce.</i></p> <p>BRE Thinking Business Space: Benefiting from more socially responsible decisions <i>Brings together the factors you should consider and advice on how to address them.</i></p> <p>CIC Constructing for Sustainability: a guide for clients and their professional advisers <i>Explains the thinking behind the principles of sustainable development and looks at how to adopt these principles throughout the life of a project.</i></p>
Health and Safety		
<ul style="list-style-type: none"> ■ The brief should take full account of Government Policy as set out in 'Achieving Excellence in Construction Procurement Guide 10: Health and Safety'. 	<p>Government Policy on Health and Safety must be followed.</p>	<p>Achieving Excellence in Construction Procurement Guide 10: Health and Safety <i>How to achieve excellence in health and safety.</i></p>



11 Sustainability

Procurement Process

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Procurement Process: Social		
Stakeholders/Local Community		
<ul style="list-style-type: none"> ■ The views, interests and requirements of stakeholders should be addressed within the brief. 	<p>Stakeholders should be identified and their needs, views and opinions considered.</p> <p>The brief should include provision for future consultations on design, construction and operating issues.</p>	<p>Design Quality Indicator A tool to allow everyone in the procurement and use of buildings to evaluate the design quality of buildings.</p> <p>CIRIA (C627) Engage A client's guide and website introducing key social issues that need to be considered during construction projects.</p>
Culture/Heritage		
<ul style="list-style-type: none"> ■ Does the brief identify the client's commitment to preserving and maintaining the culture and heritage of the local community? 	<p>As much information as possible should be gathered on the local community and culture, identifying significant spaces or buildings, so that the brief fully appreciates the historic context.</p>	
Project Team and Contractor Selection		
<ul style="list-style-type: none"> ■ The brief should identify clearly the sustainability criteria those tendering will be measured against. ■ Does the tender documentation encourage suppliers to innovate and offer higher sustainability solutions? 	<p>Under EU procurement rules public sector contracting authorities must be clear about the criteria they expect to award contracts against.</p> <ul style="list-style-type: none"> ■ The criteria must relate to the nature of the work to be carried out and the manner in which it is done. ■ The evaluation methodology should test the compliance of the proposals against the project brief. 	<p>OGC/Defra Joint Note on Environmental Issues in Purchasing <i>Information on how to address environmental issues within the procurement process.</i></p> <p>HM Treasury: Green Public Private Partnerships <i>Advice on how to take account of environmental considerations within Public Private Partnerships and PFI projects.</i></p>

What you should consider...	Why/how you should consider it...	Tools and information to help you*
	<p>Sustainability is a vital part of the pre-qualification and tender assessment process. This encourages explicit consideration of sustainability issues by the supply team and supports innovation in their responses. To support this assessment it is helpful to ask suppliers to set out in a separate section of their tender how they meet (or exceed) the specified sustainability criteria.</p>	
<p>Supply Team</p> <p>Knowledge and Competence</p> <ul style="list-style-type: none"> ■ Can the integrated supply team provide examples of successful sustainable projects they have completed? ■ Does the integrated supply team have the relevant experience? <p>Commitment and Motivation</p> <ul style="list-style-type: none"> ■ Is the integrated supply team enthusiastic and interested in sustainability issues? ■ Does the integrated supply team actively promote sustainability? <p>Resources</p> <ul style="list-style-type: none"> ■ Does the integrated supply team have suitably experienced resources to implement a sustainable project? 	<p>The supply team must see sustainability as a fundamental part of the project process. The team must include appropriately skilled and experienced suppliers, which have the relevant back-up and technical expertise to deliver the project.</p> <p>The client should ask for examples of sustainable projects undertaken and, if possible, arrange site visits.</p> <p>During a site visit the client should examine both the work of the integrated supply team as well as question the owner and occupants about the delivery process and the current operation of the facility.</p>	<p>Achieving Excellence in Construction Procurement Guide AE05: The Integrated Project Team <i>Explains how the client and supply team can work together to achieve reduced costs and improved quality and project delivery.</i></p> <p>Constructionline <i>The UK's largest register of pre-qualified construction contractors and consultants.</i></p> <p>MaSC (Managing Sustainable Companies) <i>Raises awareness and helps organisations to improve their commitment to sustainability.</i></p>



11 Sustainability

Procurement Process

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Procurement Process: Social		
Supply Team Training <ul style="list-style-type: none">■ Are the integrated supply team willing to educate all stakeholders?■ Are the integrated supply team able to provide handover training? Team Building and Communication <ul style="list-style-type: none">■ Will the integrated supply team share knowledge and best practice?		

Case Study**Supply Team: Sustainability Awareness****Government Communications Headquarters: Cheltenham**

In Private Finance Initiative (PFI) projects such as GCHQ's New Accommodation Project, the supply chain can be complex. Carillion as the main contractor for the project needed to be aware of the environmental supply chain issues both up and down the supply chain, so a position statement was developed for use during the project to help achieve best practice in the management of the environmental supply chain.

The New Accommodation project successfully fulfilled all seven clauses of the Environmental Supply Chain position statement. A couple of the clauses and the work completed to meet each target are outlined below:

- Assessing the environmental commitment of suppliers and sub-contractors, monitoring the performance and providing feedback and advice on performance and improvement opportunities.

During the procurement process, trade contractors were assessed against environmental criteria. A review of performance and the identification of improvement opportunities were possible by integrating with the project environment team.

- Establishing systems and action plans for the effective environmental management of the Supply Chain, communicating these to other participants and reporting on performance.

The environmental team routinely reviewed environmental aspects of the project. An Environmental Impact Assessment and Sustainability Action Plan were developed. The content of these documents formed the framework for communication and performance review.

Source: Carillion



11 Sustainability

Sustainable Design

Developing the sustainable design

From the design brief to design phase

The design brief should be developed in partnership with the Integrated Project Team.

It should expand on the project brief by providing greater detail, but still be flexible enough to allow for alternative solutions. This can then be used as the base for developing the scheme and for detailed design proposals⁶.

During the design phase, the client and the supply team continue to have an opportunity to influence the sustainability performance of a development.

A key focus is to identify those construction materials that best meet sustainability targets.

These sustainability considerations, like the requirement for energy efficiency or accessibility, will have a significant influence on how the final design is reached.

*The following table highlights the key areas of sustainability that should be considered during the development of both the outline and detailed design briefs. Each area is identified together with a series of questions or steps for action, a brief description of the key issues and a reference to further information. Web links to these areas in the OGC Website are provided within the electronic version of *AE11* that can be found at www.ogc.gov.uk/documents/CP0016.pdf

⁶Further details on the development of the outline and detailed design brief can be found in 'Achieving Excellence in Construction Procurement Guide 09: Design quality'.

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Sustainable Design: Economic		
Function		
<ul style="list-style-type: none"> Does the design encompass adaptability and re-use? 	<p>A design must function on a practical level and deliver a solution that meets the business objectives and is flexible.</p>	
Sustainable Design: Environmental		
Location		
<ul style="list-style-type: none"> The design should take account of a facility's orientation, solar radiation levels, wind speed and direction. 	<p>Designs should take advantage of site conditions. For example: south facing buildings have opportunities to maximise use of natural daylight and can make use of solar energy thereby reducing energy consumption and operating costs.</p> <p>North-facing buildings can maximise glare free daylight and avoid summertime overheating.</p>	
Enhancing Biodiversity		
<ul style="list-style-type: none"> Biodiversity objectives should be drawn up to reflect both opportunities and constraints for conservation within the design. Will the building materials utilised in the design be benign to local species? 	<p>There are significant opportunities at this stage for incorporating new and existing flora and fauna, habitat creation and generally enhancing the local environment through good design of structures, cladding systems as well as general landscaping.</p>	<p>Design for Biodiversity <i>A guide for developments in London – but its principles apply to all projects.</i></p>



11 Sustainability

Sustainable Design

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Sustainable Design: Environmental		
Energy Efficiency		
<ul style="list-style-type: none"> ■ The design should incorporate energy saving features. <ul style="list-style-type: none"> ■ Does the design make use of renewable energy sources? ■ Does the design make use of alternative means of heating like CHP? ■ Does the design utilise products or apply processes that allow the facility to perform energy-efficiently? 	<p>The design philosophy should encompass renewables, or energy efficient systems that deliver a facility with lower running costs.</p>	<p>The Carbon Trust <i>An independent company set up to help UK business and the public sector reduce carbon emissions.</i></p> <p>The Government's Strategy for Combined Heat and Power to 2010 <i>Incorporates the full range of support measures needed to meet the Government Estate's CHP targets.</i></p>
Materials		
<ul style="list-style-type: none"> ■ Has consideration been given to using materials with low embodied energy? ■ Can the materials be sourced locally reducing the energy used in delivery to site? ■ Does the specified timber comply with government policy? ■ Does the design maximise the cost-effective use of recycled products? ■ Does the design incorporate materials with a long life and low maintenance requirements? ■ Does the design include specifications for low energy use materials? 	<p>The design should use materials, which have a low environmental impact. That can mean examining the processes around how the material is obtained or manufactured and whether it can be re-used or even recycled at the end of its useful life.</p> <p>Building materials should be sourced from a responsible supplier.</p>	<p>Defra's Timber Procurement Advice Note: January 2004 <i>Details a new procedure for purchasing legal and sustainable timber.</i></p> <p>WRAP <i>Gives information on the recycled content of construction materials.</i></p> <p>CIRIA (C614) Crops in Construction Handbook <i>Guidance for clients, designers and architects on using crop based products in construction.</i></p>

Case Study

Materials

Natural building materials

Crop based materials are increasingly being used by the construction industry as an alternative to more traditional materials. A number of crop-derived materials are available which provide significant benefits through reduced environmental impact and cost savings during disposal. In many cases the additional cost of renewable material is offset over the whole life of the product.

Product	Benefits
Insulation Materials (hemp, flax, wool)	<ul style="list-style-type: none"> ■ Low embodied energy in manufacture ■ Naturally good performance when damp ■ Renewable feedstock
Paints (crop-derived pigments, binders and thinners, solvents and emulsifiers)	<ul style="list-style-type: none"> ■ Low embodied energy in manufacture ■ Reduced toxicity and disposal issues ■ Renewable feedstock
Floor Covering	<ul style="list-style-type: none"> ■ Reduced health and allergy issues ■ Disposal benefits ■ Renewable feedstock
Biomass Heat Boilers	<ul style="list-style-type: none"> ■ Renewable energy ■ Efficient and carbon neutral
Geotextiles for Landscaping and roadside use	<ul style="list-style-type: none"> ■ Very much lower embodied energy ■ Degrades naturally at end of life ■ Renewable Feedstock

Source: Department for the Environment, Food and Rural Affairs



11 Sustainability

Sustainable Design

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Sustainable Design: Environmental		
Waste Minimisation and Management		
<ul style="list-style-type: none"> ■ Has thought been given to a design that minimises waste both during construction, operation, refit and demolition? ■ Does the design make use of prefabricated components? ■ Can waste off-cuts be returned to suppliers for recycling? ■ Can standardised components be used? ■ Does the design take account of the segregation and storage of waste during operation of the facility? ■ Does the design facilitate both routine maintenance and component lifecycle replacement? 	<p>Many products are over-packaged and add to the waste stream.</p> <p>Use building materials that come with minimal packaging, such as those that arrive on pallets or prefabricated parts that are constructed off site.</p> <p>Modern construction methods use a range of technologies that can involve pre-fabrication or off site assembly.</p> <p>Construction costs can be increased when non-standard products are specified. Using standard products reduces errors and simplifies design and construction processes.</p> <p>Facilities should be designed in ways that will facilitate deconstruction for re-use and recycling.</p>	<p>CIRIA (C607) Design for Deconstruction</p> <p><i>A guide, which addresses the opportunities for designing buildings in which materials can later be recycled or reclaimed during deconstruction.</i></p>
Transport and Travel		
<ul style="list-style-type: none"> ■ Does the design promote the use of public transport? 	<p>The design should provide provision for all forms of transport but positively discriminate in favour of walking, cycling and public transport.</p>	<p>English Partnerships' Urban Design Compendium</p> <p><i>Informs and assists those involved in new development and regeneration. Available to order free of charge.</i></p>

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Water		
<ul style="list-style-type: none"> ■ Does the design incorporate water saving features both for consumption and discharge of wastewater? ■ Have Sustainable Urban Drainage Systems (SUDS) been considered? ■ Does the design incorporate grey water recycling and rainwater harvesting? 	<p>Water use, both indoor and outdoor, can be minimised by using water-efficient fixtures and appliances.</p> <p>Traditional drainage systems can increase the risk of flooding and create pollution caused by run-off. SUDS offer an alternative approach to drainage in built-up areas and help minimise these problems.</p>	<p>Environment Agency's Introduction to SUDS (Sustainable Urban Drainage Systems)</p> <p><i>outlines the benefits of SUDS and provides links to guidance, planning and other sources of information.</i></p>
Pollution (Air, Noise, Land and Water)		
<ul style="list-style-type: none"> ■ Does the design mitigate against any possible risks to pollution? 	<p>The design must minimise the risk of pollution. That means incorporating measures to reduce internal and external noise and ensuring that air quality is maintained.</p>	
Climate Change		
<ul style="list-style-type: none"> ■ The facility should be robust enough to cope with future climate change. ■ What practical measures can be adopted within the design? 	<p>The local climate should be assessed and the appropriate building design and materials should be used. Provision should be made for possible adaptations to counter future climate change.</p>	<p>Climate Change: The UK Programme</p> <p><i>details the strategy for climate change, the impacts and how the UK can adapt.</i></p> <p>The UKCIP 2002 Scenarios Gateway</p> <p><i>The UK Climate Impacts Programme (UKCIP) provides scenarios that show how our climate might change and co-ordinates research on dealing with our future climate.</i></p>



11 Sustainability

Sustainable Design

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Sustainable Design: Social		
Internal Environment and Accessibility		
<ul style="list-style-type: none"> Does the design provide for a healthy and comfortable environment? i.e. the design should be accessible to all – the very young, elderly or disabled. 	<p>A sustainable building design should provide all users with appropriate mobility and comfort throughout.</p>	<p>ODPM's Planning and access for disabled people: a good practice guide <i>describes how those involved in the development process can help deliver environments that can be used by anyone.</i></p> <p>Disability Discrimination Act 1995 <i>Information on the Disability Discrimination Act.</i></p>
Culture/Heritage		
<ul style="list-style-type: none"> Does the design enhance the historic or local environment? 	<p>By using local materials and traditions the environment and surroundings are enhanced.</p> <p>Where appropriate, the design should focus on achieving a style, scale, proportion and quality in keeping with the surrounding area.</p>	
Health and Safety		
<ul style="list-style-type: none"> The design should take account of Health and Safety risks. The design should consider the health and safety requirements of the end user. <ul style="list-style-type: none"> Will the materials, products and furniture be assessed for safety? Does the design minimise the risk of crime? 	<p>Good design should deliver a secure and safe environment for all.</p> <p>Well lit outdoor spaces help create a sense of community and safety.</p> <p>Care should also be taken when specifying materials or installing equipment to assess the possible impact on the health or safety of the facility's occupants or indeed those involved in the construction process.</p>	<p>Achieving Excellence in Construction Procurement Guide 10: Health and Safety <i>Guidance on achieving excellence in health and safety.</i></p> <p>Construction Design and Management (CDM) Regulations <i>A link to the Statutory Instrument 1994 No. 3140.</i></p> <p>Defra's Chemical Pages <i>Information on what the Government is doing to protect the environment from exposure to hazardous chemicals.</i></p>

What you should consider...	Why/how you should consider it...	Tools and information to help you*
<p>Local Communities</p> <ul style="list-style-type: none"> ■ Has the local and wider community been consulted on the design? ■ Have Design Quality Indicators been used to help stakeholders evaluate the design quality? 	<p>Design is for everyone. Those affected by a new design – from end users to the local community – should be consulted.</p>	<p>Design Quality Indicator <i>A tool to allow everyone in the procurement and use of buildings to evaluate the design quality of buildings.</i></p> <p>Achieving Excellence in Construction Procurement Guide 9: Design Quality <i>explains the characteristics of good design and how design quality can be raised through the procurement process.</i></p>

The sustainable construction process

Before construction begins

Before the construction process begins the client must be satisfied that the proposals meet or exceed the original project and design brief.

During construction

Construction sites often have a negative impact on the local environment and community through noise, air, water and land pollution. The client and the integrated supply team should make provisions to minimise pollution and disruption and ensure the health and safety of local residents as well as construction site staff.

However, during the construction process there are opportunities to make cost savings and reduce the environmental impact through waste recycling and recovery. For example: the client can cut the costs of disposal and reduce the pressure on landfill by utilising reclaimed materials and recycled aggregates.

After construction: the handover

The client should see the commissioning and handover of a project as an important and final phase of the construction process.

As part of the handover it is essential to provide (as a minimum) the client with training, facility operations and maintenance information, health and safety files and procedures for reporting defects.

*The following table highlights the key areas of sustainability that should be considered both before and during the construction process. Each area is identified together with a series of questions or steps for action, a brief description of the key issues and a reference to further information. Web links to these areas in the OGC Website are provided within the electronic version of *AE11* that can be found at www.ogc.gov.uk/documents/CP0016.pdf



11 Sustainability

Construction Process

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Construction Process: Economic		
Performance Monitoring		
<ul style="list-style-type: none"> ■ Is economic, social and environmental performance being monitored, recorded and reported on site? 	<p>On site performance should be recorded and fed back to the client and other parties.</p> <p>The client should refer to the original targets set within the project brief. Key Performance Indicators provide reliable data from which to benchmark.</p>	<p>Constructing Excellence: Key Performance Indicators <i>Covers areas relevant to monitoring works on site and delivering the performance demanded by the contract.</i></p>
Cost Management		
<ul style="list-style-type: none"> ■ Have whole-life costs been reassessed? 	<p>Initial costings will have been carried out at earlier critical stages in the project. However these will need to be validated during the construction phase – for example to take account of any developments and refinements in design, as the project proceeds.</p>	
Logistics		
<ul style="list-style-type: none"> ■ Has the use of a central delivery-handling centre been considered? 	<p>Managing the flow of goods, materials, equipment and people from their point of origin direct to the point of use, helps ensure that the right products reach the right place in the right quantity at the right time to satisfy customer demand.</p>	<p>Constructing Excellence: Logistics Zone <i>Useful information on construction logistics.</i></p> <p>Constructing Excellence: Logistics Case Study <i>Examples of a Consolidation Centre to manage construction logistics at Heathrow.</i></p>

What you should consider...	Why/how you should consider it...	Tools and information to help you*
	<p>Effective logistics management, particularly on large scale construction projects can help deliver:</p> <ul style="list-style-type: none"> ■ High standards of customer service ■ Reduced costs ■ Reduced waste ■ Reduced time ■ And encourage integration of supply chain teams. 	
	<p>Use of a central delivery-handling centre simplifies the construction supply chain and brings about the benefits associated with effective logistics management</p>	

Construction Process: Environmental

Biodiversity

- Has a Biodiversity Management Plan been implemented?
- Are construction techniques sympathetic to the local habitat and species?

Planning ahead helps minimise disruption and identifies opportunities to enhance biodiversity.

Occasionally protected species are discovered during the construction process. Care must be taken to avoid disturbing any protected species as this can result in a fine and prosecution.

English Nature

The relevant Statutory Nature Conservation Organisation (SNCO) should be contacted for advice concerning protected species.

CIRIA (C587)

Working with Wildlife
A resource and training pack promoting good practice.



11 Sustainability

Construction Process

42



Case Study

Biodiversity: Habitat Improvement

M6 Toll: Habitat Improvement

Britain's first Toll Motorway was constructed to relieve the West Midlands busiest stretch of the M6. As part of the scheme a massive amount of habitat translocation and creation was undertaken both within and outside of the site boundary.

A large element of the works comprised of habitat translocation before the immense earthmoving schedule got underway. Care was taken to minimise the impact on the local environment during construction and to provide safe habitats for a large variety of animal and plant species.

The habitats translocated included the following:

- Wet acid heathland translocation
- Ancient hedgerow translocation
- Vegetation translocation including ponds, watercourses, wetlands and protected plants.

In addition a number of improvements were made as part of the scheme's development. A few are detailed below:

- 6 new badger setts (and 80km of fencing)
- Some 30 new otter holt sites (and 10km of fencing)
- 300 bat roosts (for a variety of species)
- Amphibian habitat provision (Great Crested Newts, Frogs and Toads)
- Provision of numerous new nesting sites for birds.

Source: Carillion

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Construction Design: Process		
Energy Efficiency		
<ul style="list-style-type: none"> ■ Are there plans in place to minimise energy use during construction? 	<p>Transporting construction products over long distances adds to congestion on roads, increases carbon emissions and is energy intensive. This can be reduced by adopting green travel policies (e.g. sourcing local suppliers).</p> <p>Energy efficient construction processes should be incorporated wherever possible.</p>	
Waste Minimisation and Management		
<ul style="list-style-type: none"> ■ Hazardous waste on site should be disposed of in the correct manner. ■ Has a site waste management plan been implemented? ■ Is there a provision for waste segregation and auditing? ■ Have steps been taken to minimise construction waste? ■ Can any construction waste be recycled or sold on? ■ Who is responsible for disposing of the waste and are they licensed to do so? 	<p>Existing pressure on landfill, and the fact that construction accounts for a large proportion of the UK's waste, means the need for the industry to recycle, reuse and reclaim construction waste is increasingly important.</p> <p>Site waste management plans put in place procedures for managing waste streams and help put construction waste to a positive use. It also reduces the costs of waste transport and disposal.</p> <p>DTI has issued a – voluntary – code of practice on site waste management plans to assist construction companies and their clients.</p>	<p>Environment Agency Waste Licensing Registrations and Exemptions <i>The Environment Agency regulates the treatment, storage and disposal of controlled waste at over 8,000 waste management sites.</i></p> <p>DTI's Site Waste Management Plans <i>Guidance for construction contractors and clients.</i></p> <p>BRE's Smartwaste System <i>Computer-based tools to help apply the concept of sustainable waste management.</i></p>



11 Sustainability

Construction Process

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Construction Process: Environmental		
Pollution (Air, Noise, Land and Water)		
<ul style="list-style-type: none"> Plans should be in place to minimise and monitor pollution. 	<p>Construction can have a major impact on local residents and the environment.</p> <p>This can include noise, water and air pollution.</p> <p>Plans should be in place to reduce the risk of these happening.</p>	<p>CIRIA (C502) Environmental Good Practice On Site</p> <p><i>Contains guidance on how to avoid causing environmental damage and the financial penalties that can follow.</i></p>
Water		
<ul style="list-style-type: none"> Are there plans to conserve and minimise water usage on site? 	<p>Water management and conservation processes should be adopted by the supply team. This can include: recycling or using grey water.</p>	
Construction Process: Social		
Respect for People		
<ul style="list-style-type: none"> Are the contractors, suppliers and designers committed to their workforce? Are they committed to achieving the Respect for People standards? Are all site staff and sub-contractors educated and trained in environmental awareness? 	<p>A project is more likely to be successful if the workforce has the right attitude and skills to do the job. Employers should look to develop and motivate their workforce while providing a safe and healthy environment in which to operate.</p>	<p>Constructing Excellence: Respect for People Information and Toolkit</p> <p><i>The Respect for People programme is about showing respect to the construction industry's workforce.</i></p>

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Health and Safety		
<ul style="list-style-type: none"> ■ The site should be secure from theft or vandalism <ul style="list-style-type: none"> ■ Are the contractors registered to and committed to the Considerate Constructors Scheme or similar? ■ Are the contractors registered to and committed to the Construction Skills Certification Scheme (CSCS) or similar? 	<p>The client should bear in mind that they have responsibility for the health and safety of not only the people who will use the facility but also the people who will construct and maintain the facility. The client should ensure that appropriate procedures are in place on site and ensure that contractors are registered to the Considerate Constructors Scheme or a local equivalent.</p>	<p>Considerate Constructors Scheme <i>A national scheme created by the construction industry to improve its image.</i></p> <p>Health and Safety Executive: Health and Safety in the Construction Industry <i>This site provides a range of information for workers, employers and contractors or those with an interest in construction health and safety.</i></p> <p>CIRIA (C629) Site Health Handbook and CIRIA (SP151) Site Safety Handbook <i>Provides practical guidance on recognising and managing health and safety issues on site.</i></p>
Local Communities		
<ul style="list-style-type: none"> ■ Are the relevant stakeholders being kept informed of progress? 	<p>Stakeholders should be kept informed of progress once construction is underway.</p> <p>It may be helpful to distribute newsletters, set up regular meetings or advertise local vacancies, even publish information on the web or arrange site visits.</p>	



11 Sustainability

Construction Process

Case Study

Stakeholders: Community Involvement

MOD Woodbridge

The USAF base at Woodbridge, Suffolk is being redeveloped to house and train a newly formed Army Regiment.

This development is being delivered by the construction services group Skanska, who from the outset have worked with the local community, police, ambulance service and fire brigade. The local County Councillor and Sutton and Hollesley Parish Councils regularly visit the site to discuss the potential impacts on the local communities. The 80 local residents who live around the site have been kept involved by letter updates and visits from the project team.

The local Primary School (Sandings Primary) are actively involved and Skanska Woodbridge has become their "Pet Project" for the two years of construction. The project team met with the Headmaster to discuss how the school could be involved and then visited the children to carry out question and answer sessions.

Following this, the children carried out mini-projects based on issues encountered and visited the project in December 2004 to observe their project in action. They concentrated on:

- How buildings are constructed
- The importance of health and safety management
- How construction can work in hand with the protection of bats, birds, heather and trees
- Conserving materials by the recycling of thousands of tonnes of building materials, concrete and asphalt.

Source: Skanska Woodbridge

Management and operation of the sustainable facility

Monitoring and maintaining the facility after completion

It is essential that, as far as possible, the facility is monitored and maintained according to the predefined sustainability criteria set out in the project and design brief.

Following the handover of the completed facility, the client must ensure that its end-users are educated and trained in how to use the facility efficiently.

This is not only an ideal opportunity to promote the sustainability aims (and achievements) of the facility itself, but will encourage end-users to play their part in meeting those aims, as well as instilling a sense of belonging.

Once the end-users have had time to adjust to their surroundings, a 'post occupancy evaluation' should be carried out to identify not only how satisfied people are with the building but to examine how the facility is meeting its environmental objectives.

This feedback is extremely useful: it can help iron out any problems with the facility and the information gathered could be used to inform on future projects.

Those key performance indicators that were identified for the site 'in operation', should be assessed and verified appropriately throughout the operational life of the facility.

All major facilities should operate under an Environmental Management System (EMS)⁷, which provides a framework for setting, implementing and monitoring environmental targets.

This will help deliver cost savings and demonstrates, through verification, an organisation's positive environmental achievement.

*The following table highlights the key areas of sustainability that should be considered throughout the management and operation of a facility. Each area is identified together with a series of questions or steps for action, a brief description of the key issues and a reference to further information. Web links to these areas in the OGC Website are provided within the electronic version of *AE11* that can be found at www.ogc.gov.uk/documents/CP0016.pdf

⁷As part of 'Defra's Framework for Sustainable Development in the Government Estate', Central Government has made a commitment to implement Environmental Management Systems based or modelled upon a recognised standard such as ISO14001, EMAS 2 or similar.



11 Sustainability

Management and Operation

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Management and Operation: Economic		
<p>Cost Management</p> <ul style="list-style-type: none"> <li data-bbox="384 719 671 819">■ Is there a process in place to validate whole-life costing? 		
	<p>Clients must take account of the whole life costs of a project. This includes the cost of operating, managing and maintaining the facility once constructed. Although these costs would have been worked out during earlier stages of the project, these will need to be re-assessed following occupancy.</p>	
Management and Operation: Environmental		
<p>Water</p> <ul style="list-style-type: none"> <li data-bbox="352 1171 655 1272">■ Plans should be in place to monitor and reduce water usage during operation. 		
	<p>The facility may make use of water saving appliances. But a successful conservation strategy must continue throughout the facility's lifecycle.</p> <p>Users should be educated and encouraged to minimise water use wherever possible. Water saving equipment will need regular maintenance to ensure it continues to perform.</p> <p>Water use will need to be monitored regularly and any variation in use investigated immediately.</p>	<p>OGCbuying.solutions Watermark Website <i>contains industry news, advice and benchmarking information from the Watermark project.</i></p>

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Energy		
<ul style="list-style-type: none"> ■ Plans should be in place to monitor and reduce energy usage during operation. ■ Are there plans in place to undertake regular inspections of boilers and air conditioning systems (in buildings)? 	<p>Long-term energy management plans should identify opportunities to reduce energy use.</p> <p>Energy performance must be measured so that ongoing comparisons can be made.</p> <p>Energy conservation practises should be implemented through behavioural changes in the way users operate the facility.</p>	<p>BRE's Guide to Energy Performance in the Civil Government Estate <i>Helps those responsible for energy management within office buildings.</i></p> <p>The Carbon Trust: Action Energy Programme <i>Helps businesses and public sector organisations save money by conserving energy.</i></p> <p>EU Directive on the Energy Performance of Buildings <i>Promotes improvement of the energy performance of buildings within the European Community.</i></p>
Biodiversity		
<ul style="list-style-type: none"> ■ Plans should be in place to manage and care for areas of conservation both on site and within the facility. 	<p>Action taken by an owner or manager of land can affect biodiversity. It is increasingly important to be aware of the risks and regulations and the opportunities to take positive action.</p>	<p>Earthwatch's Guide to Business and Biodiversity <i>A guide for integrating nature conservation and biodiversity into environmental management systems.</i></p>
Waste Minimisation and Management		
<ul style="list-style-type: none"> ■ There should be guidance on waste minimisation and recycling for users and facility management. ■ Are recycling facilities provided? 	<p>Opportunities exist to re-use and recycle waste generated during the operation of the facility.</p> <p>Waste collection points for paper or toner cartridges help reduce costs and save resources.</p>	<p>Defra's A to Z of Waste <i>Provides information on specific materials and items and how to reduce, re-use or recycle them.</i></p>



11 Sustainability

Management and Operation

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Management and Operation: Environmental		
Environmental Performance Standard		
<ul style="list-style-type: none"> ■ Has a performance measurement such as BREEAM, EcoHomes, CEEQUAL or equivalent been carried out? 	<p>Performance measurement standards can provide a useful benchmark from which to assess the environmental management and performance of an existing facility.</p>	<p>BREEAM <i>UK based assessment standard for high environmental performance in buildings.</i></p> <p>CEEQUAL <i>An awards scheme, which assesses the environmental quality of civil engineering projects.</i></p> <p>EcoHomes <i>A version of BREEAM developed to promote the environmental performance of new, converted or renovated homes.</i></p>
Environmental Management System		
<ul style="list-style-type: none"> ■ Has an Environmental Management System been put in place? 	<p>An Environmental Management System helps reduce impacts made on the environment and can be used to monitor performance. Many organisations are now compliant with ISO 14000 (a series of international standards on environmental management), which provides a framework for the development of an environmental management system and the supporting audit programme.</p>	<p>UK Government and Local Authority Environmental Management Systems <i>assists and provides information on the operational management of environmental aspects.</i></p> <p>ISO 14000 – EMS Guidance <i>Contains examples, descriptions and options as well as practical advice that will aid both the implementation/enhancement of an Environmental Management System.</i></p>

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Management and Operational: Social		
Post occupancy evaluation		
<ul style="list-style-type: none"> ■ Feedback should be obtained from the occupants on user satisfaction. ■ Has feedback been obtained on the performance of the facility? 	<p>Organisations are increasingly adopting socially responsible attitudes towards their stakeholders and in return are being rewarded with increased productivity and commitment from their employees. Post-occupancy evaluations help identify areas where social improvements can be delivered.</p> <p>This can cover issues such as: occupant satisfaction, facilities, environmental conditions and management.</p>	<p>BRE's Post Occupancy Evaluation – Key Early Checks <i>list the key areas of concern and the suggested methods of compliance.</i></p>
Health and Safety		
<ul style="list-style-type: none"> ■ Is there a Health and Safety file? ■ Are risk assessments carried out regularly? 	<p>A positive approach to managing health and safety risks will reduce accidents and ill health and increase productivity. Risk assessments should be carried out and precautions taken to reduce any hazards. Occupants of the facility should be made aware of health and safety issues, ideally through workshops and training sessions.</p>	<p>Health and Safety Executive <i>Provides information on managing risk to help ensure safe and healthy environments.</i></p>



11 Sustainability

Management and Operation

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Management and Operation: Social		
Education		
<ul style="list-style-type: none"> ■ End-user training should be completed as part of handover. <ul style="list-style-type: none"> ■ Has environmental training been given? ■ Are end-users aware of the sustainability aims and achievements of the facility? ■ Have procurement advisers been trained in the need for securing sustainable procurement contact e.g. buying recycled, buying energy efficient, etc. 	<p>New users of a facility will need training in how the facility operates. It is important to include details on environmental practice and sustainable procurement within the workplace and emphasise how users can contribute to sustainability through energy efficiency and waste reduction.</p>	<p>OGC/Defra Joint Notice on Environmental Issues in Purchasing <i>Provides guidance to public buyers on how to integrate relevant sustainable development issues into the procurement process.</i></p>

Sustainable disposal and re-use of the site

There are two distinct areas a client must be aware of at this phase of the construction project lifecycle. These are:

- Disposal of a surplus facility
- Re-use of an existing facility.

Each area has its own set of considerations, which will apply depending on the individual circumstance of the facility in question.

Disposal

Where a facility is identified as surplus to requirements it is important to dispose of it on best terms bearing in mind the following:

- Sitting tenants
- Biodiversity rich land
- Historical context.

All Government disposal decisions should be made in accordance with Chapter 24 of Government Accounting and all vacant and surplus office property owned by Government should be notified to OGC through the Coordination procedure, or entered directly on to e-PIMS (electronic Property Information Mapping Service). This will allow government to seek alternative tenants and users.

Re-Use

Occasionally facilities reach the end of their life or no longer fulfil the function for which they were built. There are a number of options a client can choose to adopt. However, it is important that the solution represents an efficient, affordable and sustainable use of an existing built asset.

The options for re-use are:

- Adapt for a small change in use
- Refurbish and alter for a major change in use
- Demolish and recycle if the facility cannot be re-used.

It is always preferable to adapt or refurbish an existing facility rather than choosing to construct afresh. However there will be circumstances where a facility has come to the end of its life.

Demolition of an existing facility can create a large and complex waste stream, which covers a wide array of materials. This waste stream if managed carefully can provide materials for re-use in new structures, can lessen the associated environmental impacts and deliver cost savings through avoided waste disposal fees (for example, design for deconstruction).

*The following table highlights the key areas of sustainability that should be considered before commencing disposal or re-use. Each area is identified together with a series of questions or steps for action, a brief description of the key issues and a reference to further information. Web links to these areas in the OGC Website are provided within the electronic version of *AE11* that can be found at www.ogc.gov.uk/documents/CP0016.pdf

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Re-Use: Economic		
Adaptation for new use		
<ul style="list-style-type: none"> ■ Can the facility be adapted to meet future needs? 	<p>The majority of facilities can be adapted for new purposes. It is generally more cost effective and better for the environment to re-use or recycle an existing facility than construct afresh.</p>	<p>CIRIA (C621) Good Practice Guidance for Refurbishing Occupied Buildings <i>Covers project planning, collaboration, health and safety, security, and avoiding nuisance to occupants.</i></p>



11 Sustainability

Re-Use

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Re-Use: Environmental		
Waste Minimisation and Management		
<ul style="list-style-type: none"> ■ Has a waste management plan been put in place? ■ Can any demolition waste be recycled or sold on? 	<p>Clients and contractors are increasingly seeing the benefits of salvaging as much waste as possible from demolition works. Identifying materials that can be re-used or recycled not only shows concern for our environment but is also cost effective too.</p> <p>Organisations have a legal duty of care to ensure that their waste is only passed to those with the authority to handle it.</p>	<p>Environment Agency: Hazardous waste <i>Information on the special waste regulations and guidance on the treating and disposal of hazardous waste.</i></p> <p>DTI's Site Waste Management Plans <i>Guidance for construction contractors and clients.</i></p> <p>ICE Demolition Protocol <i>Details on how materials can be recovered from demolition and re-used.</i></p>
Materials		
<ul style="list-style-type: none"> ■ Have existing building materials been identified for re-use? 	<p>Materials such as tiles, timber and brick should be reclaimed from the waste stream and used in a new development.</p>	<p>Salvomie <i>Is a low value and waste construction/landscape materials information exchange</i></p>
Pollution (Air, Noise, Land and Water)		
<ul style="list-style-type: none"> ■ Plans should be in place to control and minimise emissions to air, noise and vibration. ■ Plans should be in place to avoid contaminating land and water. 	<p>Demolition, like construction, can cause contamination to land, air and water supplies. Severe pollution offences have led to prosecutions.</p>	<p>NetRegs: Construction guidelines <i>Environmental guidance on demolition processes.</i></p>

What you should consider...	Why/how you should consider it...	Tools and information to help you*
Re-Use: Social		
<p>Health and Safety</p> <ul style="list-style-type: none"> <li data-bbox="164 723 502 853">■ The demolition process should be fully planned in order to minimise risk to Health and Safety. <li data-bbox="196 864 502 965">■ Is there a need to remove any hazardous materials, such as asbestos? <p data-bbox="512 723 853 891">When deconstructing buildings, hazardous materials must be identified and precautions taken to protect on site staff from harmful exposure.</p> <div style="display: flex; justify-content: space-between;"> <div data-bbox="874 723 1212 853"> <p>Health and Safety Executive <i>Provides information on asbestos, how to reduce the risk and protect people.</i></p> </div> <div data-bbox="874 869 1212 1070"> <p>Environment Agency: Hazardous waste <i>Provides information on the special waste regulations and guidance on the treating and disposal of hazardous waste.</i></p> </div> </div>		



CP0016/01/07



Office of Government Commerce

About OGC

OGC - the UK Office of Government Commerce - is an Office of HM Treasury.

The OGC logo is a registered trademark of the Office of Government Commerce.

OGC Service Desk

OGC customers can contact the central OGC Service Desk about all aspects of OGC business.

The Service Desk will also channel queries to the appropriate second-line support. We look forward to hearing from you.

You can contact the Service Desk 8am - 6pm Monday to Friday

T: 0845 000 4999

E: ServiceDesk@ogc.gsi.gov.uk

W: www.ogc.gov.uk

Press enquiries

T: 020 7271 1318

F: 020 7271 1345

This document is printed on material comprising 80 per cent post consumer waste and 20 per cent ECF pulp.

© Crown Copyright 2007