

Carbon management of real estate

A guide to best practice

1st edition



Carbon management of real estate

RICS guidance note



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Contents

Acknowledgments	iv
RICS guidance notes	1
1 Introduction	2
2 Background	4
2.1 Sources of information relating to climate change	5
3 Understanding the business case and key drivers for carbon management	6
3.1 Top line improvements	6
3.2 Bottom line improvements	6
3.3 Regulation	6
3.4 Sources of information relating to the business case for carbon management	7
4 Developing a carbon management strategy for real estate	9
4.1 The baseline or benchmark assessment (carbon footprinting)	9
4.2 Reviewing the types of carbon emission reduction techniques available	13
4.3 Taxes and incentives	15
4.4 Forecasting an organisation's future carbon footprint	16
4.5 Establishing the overall vision	16
4.6 Financial and carbon emissions appraisal	17
4.7 Objectives and targets	17
4.8 Implementation plan	18
4.9 Detailed financial appraisal of strategy and implementation plan	21
4.10 Risk assessment	21
4.11 Sources of further information relating to the development of a carbon management strategy	22
5 Implementation	24
5.1 Communication	24
5.2 Engaging the whole organisation	25
5.3 Managing the plan	25
5.4 Training and development programmes	26
6 Managing, measuring and reporting performance	27
Appendices	29
A Case study	29
B Contact details and sources of further information	31

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RICS guidance notes

This is a guidance note. It provides advice to RICS members on all aspects of their practice. Where procedures are recommended for specific professional tasks these are intended to embody 'best practice', i.e. procedures which in the opinion of the RICS meet a high standard of professional competence.

Members are not required to follow the advice and recommendations contained in the note. They should, however, note the following points.

When an allegation of professional negligence is made against a surveyor the court is likely to take account of the contents of any relevant guidance notes published by RICS in deciding whether or not the surveyor has acted with reasonable competence.

In the opinion of RICS, a member conforming to the practices recommended in this note should have at least a partial defence to an allegation of negligence by virtue of having followed these practices. However, members have the responsibility of deciding when it is inappropriate to follow the guidance.

On the other hand, it does not follow that members will be adjudged to be negligent if they have not followed the practices recommended in this note. It is for each surveyor to decide on the appropriate procedure to follow in any professional task. However, where members depart from the practice recommended in this note, they should do so only for a good reason. In the event of litigation, the court may require them to explain why they decided not to adopt the recommended practice. The guidance note has been prepared to promote best practice in terms of carbon management. Circumstances can arise where the suggested best practice in this guidance note cannot be applied. This guidance note therefore should not compel consultants to an inappropriate course of action. Transparency simply requires that in the event the guidance note is inappropriate the reasons for this are shared with all relevant parties and a record kept.

In addition, guidance notes are relevant to professional competence in that each surveyor should keep up to date and should have informed him or herself of guidance notes within a reasonable time of their promulgation.

1 Introduction

This guidance note has been developed by the Management Consultancy and Facilities Management faculties but will be relevant to all RICS members who are advising clients or employers on the carbon management of their real estate. The guidance is primarily written for members practising in the United Kingdom but much of the guidance will also be relevant to those practising overseas. This guidance note has been designed for consultants advising occupiers of larger properties and its application to smaller properties therefore requires consultants to apply common sense as to its scale and applicability. For the purposes of this guidance the definition of carbon management of real estate is:

‘A systematic approach to managing the risks and realising the opportunities that climate change presents, looking at both the revenue and cost sides of real estate ownership and occupation, and involving areas outside the scope of a normal energy or operational efficiency review.’ (Adapted from the Carbon Trust definition.)

The guidance note provides reference only to the principal relevant areas and sources of legislation and does not seek to reiterate all legislative requirements. It is non-mandatory but seeks to provide a set of guidance procedures reflecting best practice, to provide certainty of standards required and to assist surveyors in developing organisational carbon management strategies. The guidance as published reflects law and practice as at the date of issue and the aim is to regularly update it to reflect further guidance and emerging good practice.

The guidance is intended to supplement other RICS guidance notes and publications and members are encouraged to refer to the following additional RICS material:

- Publications and research:
 - *Transforming Existing Buildings: The Green Challenge*, 2007
 - *Surveying Sustainability: a short guide for the property professional*, 2007
 - *Renewables Briefing Paper*, 2007
 - *The City Climate Challenge for 2050*, 2007
 - *Green value*, 2005
 - *The role of surveyors in reducing carbon emissions in office stock*, 2006
 - *A green profession*, 2007
 - *Renewable Energy Applications in Buildings – New Practice in Hong Kong*, 2006
 - *Assessing Energy Efficiency and Air Quality in Hong Kong Offices*, 2006
 - *Large scale energy surveys in the UK retail sector*, 2006

The above publications are available to download for free at www.rics.org

- Information Paper:

- *Energy appraisal of existing buildings*, 1993

This publication is available to download for free (members only) at www.rics.org. It is available for purchase in hard copy at www.ricsbooks.com

There will no doubt be additional information published by RICS and members are advised to check the RICS website periodically for such material. Reference to advice and guidance available from other organisations is made in the relevant sections of this guidance note. Surveyors are advised that there is a wide range of information and advice regarding environmental issues, sustainability and carbon management. This guidance note seeks to provide references to definitive, well-established and reputable sources that are well maintained and updated, and cover the range of information needed by surveyors advising clients on the development of carbon management strategies for their real estate.

2 Background

The UK Government states in *Meeting the Energy Challenge, A White Paper on Energy*, May 2007:

‘Climate change, as a result of rising greenhouse gas emissions, threatens the stability of the world’s climate, economy and population.’

Greenhouse gases, 86 per cent of which in the UK is carbon dioxide, are largely caused by human activities, in particular the burning of fossil fuels for energy generation. Based on current trends, global emissions could reach double pre-industrial levels by 2035, causing a global average temperature rise of over 2°C. Longer term there would be a 50 per cent chance that the temperature rise would exceed 5°C. This would be the equivalent to the change in average temperature from the last ice age to today. The Energy White Paper and other policy documents can be obtained from the Department for Business, Enterprise and Regulatory Reform (BERR).

The government commissioned Stern Review estimated that the overall costs and risks of climate change will be equivalent to the loss of at least 5 per cent of global gross domestic product (GDP) each year, now and forever. If a wider range of risks and impacts is taken into account the estimate could rise to 20 per cent of GDP or more. In contrast the cost of actions to reduce greenhouse gas emissions to avoid the worst impacts of climate change could be limited to around 1 per cent of global GDP each year. The Stern Review concluded that the costs of combating climate change are not only manageable but will lead to economic growth, whilst the costs of doing nothing could lead to a human and economic catastrophe. The Stern Review can be obtained from HM Treasury.

The use of energy in buildings is responsible for approximately 40 per cent of the European Union’s carbon emissions, which is more than any other sector (European Alliance of Companies for Energy Efficiency in Buildings). This figure is around 45 per cent in the UK, with non-residential buildings responsible for approximately half of this (*Transforming Existing Buildings: The Green Challenge*, RICS, 2007). Significant focus has been placed on the carbon efficiency of new buildings through the planning system and Building Regulations. However, new build represents only approximately 1.5 per cent of the UK building stock, leaving 98.5 per cent of buildings outside this legislation.

The importance of climate change is causing significant pressures on businesses to ensure that the issue of reducing carbon emissions from their real estate rises up the corporate agenda. These pressures include regulation, rising energy costs, new business opportunities, stakeholder, tenant and shareholder requirements and an increasing focus on corporate social responsibility.

These pressures apply in the corporate, private and public sectors, although the specifics of each may differ. Research undertaken by the Carbon Trust indicates that 80 per cent of *Financial Times* Global 500 companies now explicitly acknowledge the importance of climate change as a business risk and around 40 per cent of them are taking ‘concrete action’. Smaller organisations are similarly acknowledging this business risk and wishing to take early action to ensure they remain competitive. This growing realisation that ‘business as

usual' is no longer an option presents both a threat and an opportunity for RICS members. Members who are able to advise clients seeking advice on the carbon management of their real estate and who are aware of the pressures being brought to bear on client and employer businesses will win business over those members who fail to equip themselves with the requisite knowledge and experience to do so. This guidance offers a solid foundation to bring carbon management within the remit of every RICS member who has responsibility for real estate management.

Surveyors may be aware that there remains some scientific controversy that questions the influence of humans on the climate. While the arguments used might have been regarded as genuine areas of enquiry 20 years ago, further observed warming and advances in climate science as reported in the Intergovernmental Panel on Climate Change's Fourth Assessment Report put debate on whether man is affecting the environment into the past.

2.1 Sources of information relating to climate change

The recommended source of information relating to global climate change is the Intergovernmental Panel on Climate Change (IPCC) (contact details can be found in Appendix B of this guidance note). Other useful UK sources are the Meteorological Office and the Hadley Centre for Climate Prediction and Research. The Hadley Centre is the UK Government's centre for research into the science of climate change.

3 Understanding the business case and key drivers for carbon management

In order for surveyors to advise businesses on the carbon management of their real estate (either occupied or owned for investment), it can prove invaluable to have a full understanding of the business case to manage and reduce carbon emissions. Carbon management can provide real commercial returns as well as making a significant contribution to climate change. The returns can be due to top line and bottom line improvements. In addition, there is an increasing amount of legislation and regulations that seek to reduce emissions and improve corporate social responsibility for the environment.

3.1 Top line improvements

Businesses that are seen to take their environmental responsibilities seriously are likely to increase their chances of winning more business from increasingly environmentally conscious clients. Corporate responsibility, including responsible environmental management, is also scrutinised by investors and a good carbon management strategy can protect a company's share price. It has been shown that companies with a public commitment to ethics perform better on three out of four financial measures than those without. On average, these companies also have 18 per cent higher profits (source: Institute of Business Ethics). Tenants are also increasingly seeking buildings with high levels of energy performance in order to improve their own energy performance and environmental credentials. Increasingly, buildings that do not perform to these standards will be harder to let and rents are likely to reduce. High levels of energy performance also allow organisations to differentiate themselves from competitors, and this can provide an excellent promotional opportunity.

3.2 Bottom line improvements

Businesses that become more energy efficient save both energy and money, and as energy prices increase the effect of energy savings is compounded. In addition, clients are increasingly taking an interest in how companies conduct their business in relation to climate change: a lack of tangible commitment can adversely affect a company's reputation in many areas and ways, e.g. negative media comment, commissioning decisions, recruitment, shareholder investment and funding.

3.3 Regulation

There is a wide range of legislation seeking to mitigate the effects of climate change and to reduce carbon emissions from buildings. Surveyors are advised to be aware of all current key legislation and policies when advising clients on carbon management strategies. It is not intended within this guidance note to review all relevant legislation and policies but to draw attention to the key areas included, providing advice on sources of further information regarding each area.

The key policy and legislation areas are:

- planning;
- Building Regulations;
- energy efficiency and associated certification under the EU *Energy Performance of Buildings Directive*;
- Carbon Reduction Commitment (CRC);
- clean energy generation;
- funding mechanisms and incentives; and
- climate change.

Some legislation is at a European level and some at a UK or devolved administration level. The overall context for UK policy and legislation is to:

‘help us all to become more energy efficient, showing consumers how they can cut their energy use, making big organisations like supermarkets limit their emissions and setting tougher standards for the homes we build and the products we buy.’

The government also wishes to ‘mobilise the enthusiasm and potential of individuals and communities to generate their own energy locally’ (*Meeting the Energy Challenge, A White Paper on Energy*, May 2007).

Regulation, particularly the EU *Energy Performance of Buildings Directive*, requires among other things, Energy Performance Certificates (EPCs) for buildings and Display Energy Certificates (DECs) for buildings occupied by public authorities and by institutions providing public services. This Directive, enthusiastically and sensibly implemented, will provide a greater level of information relating to the energy performance of buildings thereby enabling stakeholders and tenants to compare the performance of one building or one portfolio with another.

In the public sector, the government has set out a target for its office estate to be carbon neutral by 2012 and to reduce the government’s total carbon emissions from real estate by 30 per cent by 2020. These targets are clearly critical drivers for public sector real estate carbon management strategies.

3.4 Sources of information relating to the business case for carbon management

There is a wide range of information available relating to the business case for carbon management. Some of the key sources are highlighted below with full contact details provided in Appendix B.

Further information and assistance relating to the business case for carbon management, and to top and bottom line improvements, can be obtained from the Carbon Trust. Further information regarding planning, Building Regulations, EPCs and DECs in England and Wales is available from the Department of Communities and Local Government. Information regarding policies and legislation in England and Wales concerning climate change, energy efficiency, funding and some incentives is available from the Department for Environment, Food and Rural Affairs (DEFRA) and information regarding UK clean energy and renewables is available from the Department for Business, Enterprise and Regulatory Reform (BERR). Details of policy and legislation in Scotland and Northern Ireland can be obtained

from the Scottish Parliament and the Northern Ireland Executive respectively and details relating to Wales can be obtained from the Welsh Assembly Government. Legislation and policy at a European level can be obtained from the European Parliament and European Commission websites. Contact details for all these government offices can be obtained from Appendix B of this guidance note.

4 Developing a carbon management strategy for real estate

Whether surveyors are acting or working for a large institutional investor, a local authority or a small to medium sized company, if the organisation is to manage the carbon emissions from its real estate successfully it is recommended that a full carbon management strategy and detailed implementation plan be developed, agreed with all stakeholders and publicly communicated. In this section, guidance is provided on the process for the development of such a strategy and implementation plan for all types of organisation. The earlier everyone in the organisation can be involved, the easier the implementation stage will be. It is therefore recommended that the process is communicated to everyone with regular updates and relevant staff are included at each stage and invited to comment and participate in the process. It can also prove valuable for someone (ideally the surveyor) to take the lead role in preparing the real estate strategy and the implementation plan. The importance of leadership and leading by example cannot be overemphasised. If a corporate energy manager is appointed they will then work with this person towards implementation. It is likely, of course, that the strategy for real estate may form part of a wider corporate carbon management and sustainability strategy. The wider strategy is likely to embrace staff behaviour in more detail than will the real estate strategy. Typically, the wider strategy may include:

- waste management;
- recycling of waste;
- composting of waste;
- encouraging staff to walk, cycle, car share or use public transport;
- staff awareness and motivation campaigns, e.g. to encourage staff to switch off equipment, computers and lights when not in use;
- returning ink toner cartridges to suppliers or recycling;
- green procurement, based on a life cycle analysis approach;
- purchasing and contracts to be made only with companies with high environmental standards;
- printing drafts on used paper; and
- printing and filing.

A company-wide carbon management and sustainability strategy provides the framework to encourage staff to adopt a positive attitude towards sustainability at work and at home. This guidance note does not seek to address such wider policies but recommends surveyors consider these wider issues when developing strategies for change amongst staff and supply chains.

4.1 The baseline or benchmark assessment (carbon footprinting)

For any organisation the first step in developing a real estate carbon management programme will be to accurately measure the current level of

carbon emissions associated with their existing real estate. This is known as a baseline or benchmark assessment, or, less formally, carbon footprinting. This guidance note will refer to this as a baseline assessment. Surveyors are advised to consider the need for organisations to be able to benchmark themselves in order to measure the future carbon performance of their real estate and to compare their performance with peer group organisations. Measurement also highlights specific areas using the most energy intensive resources, identifies properties that are energy inefficient and helps to identify areas where cost savings can be achieved.

4.1.1 Commissioning or undertaking a baseline assessment

It is anticipated that frequently the baseline assessment for real estate will form part of an overall assessment of the entire organisation and its activities and, therefore, the process of commissioning the assessment may not be included within the surveyor's specific instruction or employment. However, it is recommended that surveyors review tenders and baseline assessment methodologies in order to ensure that sufficient focus is given to the organisation's real estate and to provide comment and feedback on the proposals at an early stage.

When an organisation commissions or undertakes a baseline assessment for real estate, it is recommended that a number of key decisions be made and communicated to potential tenderers or staff undertaking the assessment. Again, if this is part of a corporate assessment these will be considered on a wider basis. The key decisions may include:

- whether the assessment will be undertaken by internal staff or outsourced;
- whether only direct emissions are to be measured or, if indirect, whether this is first tier suppliers only or the entire supply chain (this will depend largely upon the likely scale of contributions made by indirect emissions);
- whether to account for embodied carbon*;
- whether to account for carbon dioxide emissions only or all greenhouse gases;
- type of environmental management system (EMS) and environmental accreditation scheme to be used (see section 6);
- how the baseline assessment will be reported, i.e. will it be included within the organisation's annual report and accounts;
- which key performance indicators (KPIs) are relevant to the organisation; and
- how the assessment will account for planned future development and acquisition of real estate.

*Embodied carbon is the carbon that is contained within building (and other) materials and the energy and resources used to process and produce them. The Environment Agency has a free embodied carbon calculator on its website for new building construction.

Clearly key decisions will vary depending upon individual businesses.

In terms of whether the assessment is undertaken by internal staff or outsourced, there are a number of issues that may need to be considered. The decision will depend upon the type of organisation and the staff employed since some organisations may simply not have sufficient internal resource,

although they may consider bringing this in and developing the role to one of an energy manager to take the final programme forward. Internal management or facilities management surveyors can play a key role in providing information relating to the use of real estate, energy consumption, service charges, leasing arrangements, construction methods and other relevant information. It may be that an external consultancy is used to actually calculate emissions on the basis of information provided by surveyors.

A basic baseline assessment can be made fairly easily, focussing on direct emissions and emissions from electricity and other non-renewable fuels used by buildings occupied by the business. Generally, in this type of basic assessment, indirect emissions such as those relating to occupation by tenants would be excluded and the assessment would focus only on the direct emissions from the organisation's occupied buildings. For more detailed assessments and those involving rented properties (particularly if multi-let), it may be necessary to employ specialists.

For organisations involved in property development and/or in trading property it is recommended that a baseline assessment is made of the entire supply chain including, ideally, the embodied carbon involved in the development of buildings. This could include:

- material development and preparation;
- construction process (including transport);
- disposal or ongoing occupational emissions from tenant occupiers; and
- refurbishment and redevelopment.

The importance of embodied carbon is significant in that early research indicators suggest that this could equate to between 8 and 15 years of the operational energy of the building. This can become even more significant if there is a high turnover of occupancy in a building held for investment. Such changes lead naturally to increased incidence of refurbishment often involving the replacement of energy intensive partitioning and plant. However, our collective knowledge of embodied carbon is at an earlier stage than that of tackling the carbon footprint of buildings in use. The Carbon Trust is developing a systematic approach to carbon footprinting of products including building products.

4.1.2 Baseline assessment practice

Surveyors may need to be aware of the need for the use of consistent units of measurement of carbon emissions and energy usage, and for reporting procedures to be clearly defined and followed. Surveyors are recommended to use DEFRA's environmental reporting guidelines for UK business as a starting point in order to ensure that carbon benchmarks are quantitative, consistent and comparable. These guidelines propose that organisations report carbon emissions (and other environmental impacts) using environmental KPIs. However, DEFRA's guidelines indicate that direct emissions result from an organisation's own operations only and all other emissions are indirect or supply chain. Indirect emissions are, of course, also a consequence of an organisation's activities although they occur at a source controlled by another organisation. Therefore, it is suggested that in order to ensure a full and comprehensive analysis of an organisation's benchmark carbon footprint, emissions from 'first tier' suppliers to the organisations are also accounted for. It is recommended that emissions by tenants of the organisation be included too.

Measurable emissions are generally of the six greenhouse gases regulated by the Kyoto Protocol. Carbon dioxide makes up 86 per cent of the UK's greenhouse gas emissions: the box below identifies other greenhouse gases.

methane
nitrous oxide
hydrofluorocarbons
perfluorocarbons
sulphur hexafluoride

One way of determining the relative contributions of these different gases is to use the Global Warming Potential (GWP) index, which is published by the Intergovernmental Panel on Climate Change (IPCC) (and available from DEFRA). This allows the contribution to be expressed in terms of CO₂ equivalents (CO₂e).

Example:

One tonne of methane (CH₄) has a GWP of 23 and, therefore, has the same global warming effect as 23 tonnes of CO₂.

Surveyors undertaking a baseline assessment are advised to ensure that all data is accurately collected. For gas and electricity consumption, measurements are generally in MWh or kWh. It is recommended that other fuel data be collected using the most appropriate units and that consumption be converted into CO₂e quantities as described above. It is then advisable to agree the allowance of a margin for potential errors in data collection and conversions.

The emissions sources for real estate could include:

- on-site usage of fuel (either through direct occupation or that by a tenant); and
- on-site usage of electricity (as above).

One common way of gathering data is from all utility meters or utility bills and then, where necessary, to convert this to CO₂e emissions.

The approach used differs from organisation to organisation but it is increasingly important that approaches are standardised. In addition to DEFRA's reporting guidelines, one of the most commonly used methodologies is the Greenhouse Gas Protocol developed by the World Resources Institute and the World Business Council for Sustainable Development. This is available free of charge online from www.ghgprotocol.org. The International Organisation for Standardisation also provides guidance on emissions reporting and carbon footprinting.

The British Property Federation's Landlord's Energy Statement (see Appendix B for contact details) provides a very useful and tested methodology, particularly for a multi-let portfolio. Alternatively, it may be that the Energy Performance Certificate (EPC) and Display Energy Certificate (DEC) being introduced to implement the EU *Energy Performance of Buildings Directive* will provide a useful source of energy rating and emissions data. However, it should be noted that the EPC will be specific to the building itself (such as type of structure, glazing, etc.) and not necessarily the current occupier's energy usage.

It may also be helpful to gather data relating to use patterns, types of structure, glazing, staff numbers, exposed walls and other data relevant to energy

performance. This can be valuable in providing a full set of baseline data against which future targets can be set, comparison with benchmarks made, and performance judged.

A baseline assessment may also be made individually for all buildings owned or occupied by the business.

4.2 Reviewing the types of carbon emission reduction techniques available

Before any carbon management programme can be developed surveyors are advised to develop a broad awareness of the possible carbon emission reduction techniques that could be adopted. These can be broadly categorised as follows:

- absolute reductions;
- offsetting; and
- emissions trading.

Surveyors are recommended to remain up to date as this relatively new market develops.

4.2.1 Absolute reductions

After measuring existing emissions from all buildings, surveyors are recommended to firstly identify where absolute emissions can be reduced. This is often known as internal carbon abatement and could be by either carbon or energy efficiency improvements. Real estate provides excellent opportunities to make absolute reductions and these can include efficiency improvements in both the occupation of buildings and in the development process. Absolute reductions can be either direct or indirect. Direct are those that relate to emissions made by the organisation themselves whereas indirect are made by others in the organisation's supply chain. Examples might include:

- direct reductions achieved by the improved efficiency of:
 - heating (including plant and controls, commissioning and maintenance);
 - lighting (and controls);
 - air conditioning (plus controls, especially in 'heat v cool' situations);
 - use and performance of appliances and IT equipment;
 - office (or other) equipment; and
 - optimal use of buildings.
- direct development-related (minor and major) reductions through:
 - increased insulation in buildings;
 - improved thermal performance;
 - use of on-site, nearby or off-site (or shared) renewable energy generation including solar, wind, ground source heat pumps, biomass and combined heat and power units; and
 - use of smaller buildings for more intensive use.

- indirect reductions achieved by:
 - using only carbon efficient suppliers and contractors;
 - using ‘green leases’ to ensure efficient use of energy in tenanted buildings; and
 - working with tenants to improve their use of energy.

Reductions can also be achieved by the purchase of ‘green energy’.

4.2.2 Offsetting

It is recognised that a business’ approach to offsetting may be established in an overall corporate carbon management strategy but surveyors are advised to be aware of the opportunities that can be provided by offsetting. However, it is recommended that these only be considered after looking at ways in which absolute direct and indirect emissions can be reduced. The underlying principle of offsetting is the purchase of carbon credits. The result of this has been, in effect, the development of a marketplace for carbon. There are two types of offsetting, regulated and voluntary. In order for countries to meet legally binding targets set under the Kyoto Protocol, countries can use regulated offsetting mechanisms such as the Clean Development Mechanism (CDM), Joint Implementation (JI) or Emissions Trading. These allow for the trading of carbon credits or carbon emissions reduction units, which can be used for compliance purposes for companies with legally binding targets.

The concept of the CDM and JI is the receipt of carbon credits for investment in projects in either developing (CDM) or developed (JI) countries, which will avoid greenhouse gas emissions. Details of these schemes can be obtained from the Department for Business, Enterprise and Regulatory Reform (BERR). Emissions trading is based on a cap and trade system where developed countries who have reduced emissions below their allocated allowance are able to trade the surplus to others who have exceeded their cap. Details of the EU and UK Emissions Trading Schemes can be obtained from DEFRA.

In addition, the proposed Carbon Reduction Commitment (CRC) aims to reduce carbon emissions in large non-energy intensive organisations. This will be a mandatory emissions trading scheme targeting around 5,000 organisations whose emissions are not currently included in the EU Emissions Trading Scheme nor within Climate Change Agreements (discussed in section 4.3). The CRC will cover organisations whose electricity consumption is greater than 6000 MWh/yr, which is equivalent to an annual electricity bill of around £500,000. Details can be obtained from DEFRA.

In November 2007, the prime minister also announced that the government will ‘introduce carbon trading in the UK for large but less energy intensive businesses, for offices, supermarkets, commerce, public sector organisations, saving at least another 4.2 million tonnes of CO₂ a year.’

The voluntary offsetting industry is developing rapidly in response to increasing demand by organisations wishing to demonstrate that they are managing their environmental impact. Such schemes can be a cost effective method of achieving carbon neutrality. The reason for this is mainly due to the currently relatively large capital cost of renewable technology that is capable of producing absolute reductions. Voluntary offsetting can include investing in the development of clean technologies, carbon sequestration and forestation and a range of other initiatives. Surveyors are advised to be aware that this

market is currently unregulated and critics see it as a cheap alternative to achieving absolute reductions through improved energy efficiency and the use of clean energy technologies.

The voluntary offsetting market is complex and the need to acquire credible good quality offsets critical. Poor quality offsets can cause significant risks to the reputation of a business and may not actually provide any real environmental benefit. It is recommended that due diligence is undertaken in assessing the integrity and credibility of any offsets considered as part of a carbon management strategy. This could include:

- verification by a third party as meeting an approved standard;
- ensuring that the offset is really adding environmental value, i.e. reductions are additional to what would have happened if the project had not occurred;
- ensuring the reductions achieved are maintained over a period of time; and
- ensuring that offsets are not double counted.

Carbon credits are sold through a number of mechanisms including brokers, credit aggregators and retailers. Voluntary credits are usually only sold through retailers.

4.3 Taxes and incentives

Surveyors are recommended to ensure they understand the broad range of taxes and incentives that could impact on a carbon management real estate strategy. There are a range of fiscal and other measures in place to address climate change issues and encourage low carbon energy usage. The main measures to be aware of are:

Climate Change Levy

This applies to energy used in industry, commerce and the public sector. The more energy a company uses, the higher the levy that is applied, thereby creating an incentive to use less energy. For many businesses the levy can comprise up to 10 per cent of the overall energy bill. Details can be obtained from HM Revenue and Customs (HMRC).

Climate Change Agreements

Energy intensive companies in some sectors can sign a Climate Change Agreement with government and receive an 80 per cent discount on the Climate Change Levy in return for agreeing and meeting challenging targets for reducing their energy use. Details can be obtained from DEFRA.

Renewables Obligation

This is a mandatory requirement for UK electricity suppliers to source an increasing percentage of their electricity from eligible renewable energy generators. Organisations creating energy from renewable sources can sell excess electricity to suppliers to help them to meet this obligation. Details can be obtained from the Department for Business, Enterprise and Regulatory Reform (BERR).

Enhanced capital allowances

For the purchase of energy efficient equipment that will help save energy and reduce carbon emissions. The equipment must be listed on the UK Energy

Technology list. The whole investment can be set against tax for the year of purchase. Details can be obtained from the Enhanced Capital Allowances website (see Appendix B for details).

4.4 Forecasting an organisation's future carbon footprint

Once the baseline assessment of an organisation's real estate has been prepared it is recommended that this be verified by a third party such as a consultancy or accountancy firm in order to ensure credibility of the results when or if these are published in the public domain.

The baseline assessment will form the benchmark upon which the carbon management programme will then be built and the performance measured.

Once the baseline assessment has been made it is recommended that a 'business as usual' scenario is developed whereby the baseline data is projected forward for a defined period or periods (usually five years or five yearly). This projection can be based on assumptions published by BERR regarding energy price rises, increases in energy consumption and other key issues.

4.5 Establishing the overall vision

Having undertaken a baseline assessment and developed a 'business as usual' scenario the next recommended step is to establish the vision for the organisation's real estate carbon management strategy. This will be the broadest and most general set of goals and will describe the aspiration for the future without specifying the means by which this will be achieved. An effective vision would inspire both staff and other internal and external stakeholders and would seek to achieve 'the best, the most or the greatest'. Some options might be:

- to reduce emissions by a given date or dates;
- to achieve carbon neutrality of the organisation's real estate by a given date, either for indirect emissions, first tier supply chain or entire supply chain;
- to achieve zero carbon status of real estate by a given date; and
- to ensure all real estate meets a specified (for example, A or B) rating in an Energy Performance Certificate.

It is recommended that such targets be challenging but also acknowledge that there may be associated technical risks and costs.

A mission statement can then be used to articulate the vision. Mission statements are generally short and focused, establishing the boundaries that will then guide the formulation of the strategy. Some examples of how mission statements might start are given in the box below:

- to lead by example;
- to have the lowest emissions from real estate in a given sector;
- to have a carbon neutral real estate portfolio by ... ; and
- to have a zero carbon real estate portfolio by

It is anticipated that often the vision and mission statement for real estate may be part of an overall carbon management vision for the organisation.

4.6 Financial and carbon emissions appraisal

Having set out the vision and mission statement, the next step will often be to prepare an initial financial appraisal for meeting the vision. It is helpful for this to include an evaluation of the carbon emissions savings that will be made. It may be that a number of options are assessed at this stage. If the organisation is planning for carbon neutrality via offsetting then some of the issues to consider are:

- energy cost savings;
- costs associated with offsetting; and
- additional staff resource to manage programme.

If zero carbon status is sought some of the issues to consider include:

- energy cost savings;
- renewable energy capital acquisition and installation costs; and
- maintenance costs of renewable energy technology.

If the agreed mission is to reduce emissions over a period of time then a 'reduced emissions' scenario is recommended. This should calculate the annual energy consumption and emissions on the basis of the agreed reductions targets year on year, building in key assumptions regarding cost and consumption. As indicated in section 4.4, the Department for Business, Enterprise and Regulatory Reform (BERR) can provide data on projected energy costs and consumption.

This scenario can then be plotted on a graph with the 'business as usual' scenario figures (see section 4.4) in relation to both energy costs and CO₂ emissions. The difference between the 'business as usual' scenario and the 'reduced emissions' scenario will indicate the 'value' of achieving the vision. This is sometimes referred to as the 'value at risk.' This can be a very powerful tool in terms of seeking buy in from stakeholders and staff and provides a powerful promotional message.

4.7 Objectives and targets

It is recommended that the next step is to establish the broad objectives and targets that will work towards achievement of the vision and mission statement. A detailed implementation plan will then set out exactly how these will be achieved with dates and individual responsibilities. Examples of objectives might include:

- integrating carbon management of real estate into all business planning processes and procurement strategies;
- demonstrating leadership to suppliers and contractors by putting the owned and managed estate in order;
- inspiring staff and shareholder participation in the implementation of the carbon management actions and initiatives;
- delivering cost savings from carbon management of real estate;
- reducing the demand for energy and increasing the use of renewable energy generation to increase the overall effectiveness of energy management; and
- delivering a series of energy reduction projects that will combine quick wins, high impact CO₂ savings and direct cost savings.

In addition to the broad objectives, it is recommended that a set of measurable targets are agreed. It is important to put these targets into context when they are set; ideally by making specific reference to UK and European Governments' targets, and perhaps to peer group and sector targets. Examples could include reference to:

- UK Kyoto commitment to reduce emissions by 12.5 per cent by 2012 (against a 1990 benchmark);
- UK Government aspirational target of a 20 per cent reduction in emissions by 2020 (against a 1990 benchmark);
- UK Government aspirational target of a 60 per cent reduction in emissions by 2050 (against a 1990 benchmark);
- Regional Spatial Strategy targets for a given area; and
- research by the Tyndall Centre for Climate Change Research.

Organisational targets can then be set against this national and regional context. It is recommended that, as a minimum, organisational targets for real estate show a phased reduction leading to a 60 per cent reduction in emissions by 2050 against the baseline year chosen. This will then allow a means to focus actions and measure successes, giving the organisation a feeling of progress.

An example emissions reduction target is shown in the box below:

Our proposed emissions reduction target is to reduce CO₂ emissions year on year by a minimum of xx% from 2007/08 to achieve reductions (against the 2005/06 baseline) of:

- 10% by 2012;
- 30% by 2020; and
- 60% by 2050.

Achieving this overall reduction target will deliver estimated cumulative savings over the period of the plan of £xx in energy savings and xx tonnes of CO₂.

4.8 Implementation plan

Establishing an implementation plan setting out how the vision, objectives and targets will be achieved is highly recommended. It is advisable to provide a detailed plan identifying, ideally under separate sections or themes, the actions that are required, by whom and by when. An effective plan would be very simple to use, give clear dates and identify leaders for each activity. Progress monitoring and internal reporting will help build a library of experience from which to draw.

The content will clearly depend upon the individual circumstances of organisations and also possible trigger points at which it is appropriate to take action. Many organisations set the plan out on a five or ten year rolling programme, i.e. reviewed annually thus always providing a full plan for the next five or ten years.

It is worth considering the different stages of the life cycle of real estate, namely:

- asset creation;
- use;

- maintenance and refurbishment; and
- disposal or redevelopment.

Clearly, not all organisations will hold real estate at all stages or may only wish to focus on some stages for the plan.

It is recommended that when developing the implementation plan, the first element would be to decide on the vision and the desired carbon performance outcome. This will almost certainly require organisational change and therefore it will be important to identify the possible triggers for change both internal to the organisation and external. Internal triggers will be very specific to each organisation and to each property. However, they offer the opportunity to develop specific interventions to reduce carbon emissions at lower cost. They may include:

- forthcoming property management reviews;
- forthcoming strategic plan reviews;
- priorities within the company's overall strategic plan and corporate risk analysis;
- lease renewals;
- acquisition programmes; and
- refurbishment timetables.

External triggers may include:

- changes to planning requirements and guidance;
- changes to Building Regulation requirements;
- introduction of Energy Performance Certificates (EPCs) and Display Energy Certificates (DECs);
- corporate social responsibility requirements;
- costs of energy;
- tenant, investor or stakeholder pressure;
- competitor pressure;
- legislation;
- introduction of carbon reduction commitment;
- availability of grants and funding; and
- government targets.

Initially, it is helpful to establish a long list of projects, which can then be prioritised in the implementation plan. It is strongly recommended that relevant staff within the organisation are closely involved in the development of the implementation plan and are invited to participate in and comment on its content. Circulating regular updates will help with the implementation stage too. Although specific projects will depend entirely upon the type of organisation and their interest in real estate, the examples given in subsections 4.8.1 to 4.8.4 highlight the variety of projects that are possible.

It can then prove valuable to give each project a timetable and to identify an individual who will lead that project. It may be the case that individual projects needing a capital investment will require individual business cases to be developed and, therefore, some may not go ahead.

4.8.1 Policy reviews

- Review benchmark energy assessments for all buildings and provide reports on individual opportunities for improvements.
- Establish a process and routine for monitoring energy performance on a monthly (or other) basis.
- Review acquisition policy to ensure energy efficiency is a priority (either as tenant or landlord) and to set criteria in relation to energy performance (see ideas for development policy below).
- Review development policy for new buildings to include:
 - integrating on site renewables (or community based renewables) providing a minimum of, for example, 10 per cent of the energy requirements of the building (Merton rule*);
 - air tightness and high thermal performance standards of insulation (exceeding Building Regulations);
 - half hourly metering linked to performance analysis and monitoring and targeting;
 - ensuring equipment installed will qualify for enhanced capital allowances;
 - installing submeters to allow a breakdown of energy consumption;
 - optimising solar gain;
 - exposing slab structure to improve thermal performance; and
 - installing heating and air conditioning controls.
- Review purchasing policies for outsourced services and supplies to take more account of energy and emissions.
- Prepare EPCs for all properties.
- Review services provided for tenants or services provided for the organisation by a landlord.

*The Merton rule, as it has become known, is based on a policy established by Merton Council that states that all new non-residential developments above a threshold of 1,000m² will be expected to incorporate renewable energy production equipment to provide at least 10 per cent of predicted energy requirements.

4.8.2 Recruitment

Appoint an energy manager for the organisation (if relatively small) or for individual buildings. Ideally, the energy manager will be involved in the preparation of the implementation plan.

4.8.3 Quick wins

It is strongly recommended that 'quick wins' are established that will generate a feeling of achievement and progress and will provide headline savings figures that can be immediately reported. They can include:

- undertaking simple repairs that will improve energy efficiency (these may have already been identified in regular surveys);
- fitting low energy lighting;

- fitting improved energy controls and thermostats (per room);
- changing hours of operation;
- changing temperature settings;
- discussions with tenants (or landlord) to agree changes in service hours, plant schedules, etc.; and
- upgrading from single glazing to double glazing.

4.8.4 Longer term (perhaps reliant on identified trigger points)

- Review leases for new lettings and where possible lease renewals of buildings. Issues to consider might be:
 - using gross leases, i.e. tenants to pay for all bills relating to the running of the building;
 - setting maximum energy consumption of lighting and heating used in the property per square metre of the net lettable area;
 - submetering of electricity (ideally one for small power and one for lighting) and gas services used by the property;
 - requirements to turn off appliances when not in use;
 - penalty clauses for inefficient use of energy;
 - rent reviews linked to energy performance;
 - waiving of dilapidation costs where measures have been installed to improve energy efficiency, i.e. to remove the possibility that this would have to be replaced with original equipment at the end of the lease;
 - organising an energy awareness campaign to inform tenants of ways to improve energy efficiency;
 - landlord to undertake an annual energy audit of the building and provide a copy to the tenant; and
 - fixing the amount of energy to be paid within service charge, e.g. set below average of last three years consumption.
- Hold discussions with all tenants (or landlords) to seek to agree ways in which the energy efficiency of buildings can be improved.

4.9 Detailed financial appraisal of strategy and implementation plan

It is then recommended that a full financial appraisal is undertaken in order to evaluate the costs and savings relating to the strategy and implementation plan. The 'value' of the strategy will already have been evaluated as set out in section 4.6. It is usually advisable that the financial appraisal be undertaken using a discounted cash flow model, taking account of the timing for costs and savings.

4.10 Risk assessment

In concluding the strategy and implementation plan, it is recommended that a detailed risk assessment be undertaken to evaluate the likely risks for each element of the strategy and the associated costs or impact of each risk. It is often valuable to give a category to each identified risk (perhaps between 1, high risk, to 5, low risk of occurrence).

4.11 Sources of further information relating to the development of a carbon management strategy

There is a wide range of information and assistance available for organisations in the UK wishing to implement a carbon management strategy. Some of the recommended sources are detailed below and full contact details are given in Appendix B.

The Carbon Trust

The Carbon Trust is an independent ‘not for profit’ company set up by the government with support from business to accelerate the transition to a low carbon economy by helping organisations reduce their carbon emissions and develop commercial low carbon technologies. Key to this aim is its support for UK businesses and public sector organisations to help them reduce their carbon emissions. The Carbon Trust offers a range of support, advice and information to organisations wishing to develop and implement carbon management strategies and improve energy efficiency. It also supports low carbon innovation. In addition to its carbon management and site energy survey services, its design advice service helps clients assess options for reducing carbon emissions and improving energy efficiency at the new build and major refurbishment stages. For the public sector, the Carbon Trust provides tailored technical and change management support and guidance for local authorities, education bodies and the NHS to help realise carbon emissions savings. The Local Authority Carbon Management Programme provides a toolkit and useful case examples of the approach taken by authorities. The Carbon Trust can also provide information on funding that may be available for both private and public sector clients.

Energy Saving Trust

The Energy Saving Trust is an independent company funded by both government and the private sector and provides advice to homeowners and small businesses. Information provided includes advice on funding and grant opportunities for small-scale energy installations and energy efficiency measures.

The Environment Agency

The Environment Agency’s NetRegs service provides free environmental advice for small businesses in the UK. The Agency also publishes guides to good practice for businesses in different sectors.

Renewable Energy Association

The Renewable Energy Association provides advice on the different renewable energy technologies that are available.

British Property Federation

The British Property Federation undertakes research into energy efficiency in commercial buildings and can provide information regarding sustainability programmes for the commercial property sector. Previous reference has been made to the landlord’s energy statement published by the Federation.

The Confederation of British Industry (CBI)

The CBI publishes a Business Guide entitled *The route to sustainability*, which provides useful information relating to the development of a sustainability strategy.

Envirowise

Envirowise offers UK businesses free, independent, confidential advice and support on practical ways to increase profits, minimise waste and reduce environmental impact.

The CarbonNeutral Company

The CarbonNeutral Company offers carbon consulting and carbon offsetting services. For organisations wishing to offset some of their carbon emissions the company can provide advice on the different offsetting options that exist.

Sustainable Development Unit

The Sustainable Development Unit (SDU) is situated within DEFRA. It works to embed, monitor and report on sustainable development across Whitehall and the UK. Work includes the development of a UK strategy to set out how government will facilitate the delivery of sustainable development. The SDU also sets out the carbon emissions performance targets for the government's real estate portfolio. The Unit also sponsors the Sustainable Development Commission, an advisory non-departmental public body, set up to report to the prime minister, the first ministers in Scotland and Wales and the first minister and deputy first minister in Northern Ireland. The Sustainable Development Unit website provides a very useful range of information for private and public sector organisations.

Environmental rating methods

For clients and employers wishing to rate real estate formally in terms of environmental performance, there are a number of well-established methods that are recommended:

- Commercial real estate
 - BREEAM Rating – Building Research Establishment (BRE).
 - Leadership in Energy and Environmental Design Green Building Rating System (LEED) – US Green Building Council.
 - Energy ratings by way of Energy Performance Certificates (EPCs) and Display Energy Certificates (DECs) – DEFRA.
- Residential real estate
 - Code for Sustainable Homes – CLG (the BRE scheme 'Ecohomes' may be relevant in Wales, Scotland and Northern Ireland).
 - Energy ratings by way of EPCs – DEFRA.

Corporate Social Responsibility

The government's Corporate Social Responsibility website provides advice and information to help organisations account for the economic, social and environmental impacts of the ways they operate and helps to maximise the benefits and minimise the downsides of such action.

5 Implementation

5.1 Communication

Clearly, the communication of the strategy and implementation plan is critical to its success. Surveyors managing this type of process are advised to ensure that relevant individuals are involved in the whole developmental process but there will then be a need for a formal communication regarding the organisation's plans. Firstly, it is valuable for this to take the shape of a written strategy document that can be placed in the public domain as well as made available for all staff. There is no defined format for this but the following points provide some idea of what could be included in the written policy document:

- 1 Executive summary
- 2 Background
 - (a) the case for action
 - (b) purpose of strategy and implementation plan document
 - (c) timescales for implementation
- 3 Carbon management of real estate strategy
 - (a) context
 - (b) internal drivers and triggers for change
 - (c) external drivers and triggers for change
 - (d) vision and mission statement
 - (e) strategic objectives
 - (f) targets
- 4 Baseline assessment and forecasts
 - (a) overall baseline assessment
 - (b) property by property baseline
 - (c) business as usual scenario (overall and property by property)
 - (d) reduced emissions scenario (overall and property by property)
 - (e) key performance indicators (KPIs)
- 5 Implementation plan
 - (a) detailed activity list
 - (b) timings for each activity
 - (c) identification of leader for each activity
 - (d) quick wins
- 6 Cost and emissions savings
- 7 Financial appraisal (including summary figures)
- 8 Risk assessment
- 9 Communications plan

- (a) internal communication
- (b) external and stakeholder communication
- (c) reporting of benchmark assessment
- (d) annual performance reports – internal and external

It is suggested that an internal launch be made of the strategy and implementation plan with an opportunity for everyone to discuss this and provide further feedback and comment.

5.2 Engaging the whole organisation

A move to a low carbon company will involve a large-scale change to existing practice and policy and may, therefore, invoke significant resistance.

The initial responses evoked by change can typically include feelings of instability, stress and uncertainty. These reactions can pose enormous problems to management as these responses are closely linked to power, anxiety and control.

A change towards carbon management may require an approach which is akin to a political campaign to ‘win the hearts and minds’ of staff. In such situations it will be helpful to:

- gain senior management support and buy in;
- gauge the depth of resistance that can be anticipated from their staff early in the process;
- identify key individuals and perhaps groups within the organisation who could help form favourable opinions;
- identify the motivation factors to achieving change;
- build participation in planning and implementing of change;
- consider how to reward behaviour that supports change;
- establish a sense of urgency;
- empower a broad base of people to take action (as identified in the implementation plan);
- generate quick wins (as mentioned in section 4.8.3);
- consolidate gains and produce even more change; and
- institutionalise new approaches within the business culture.

Emphasising the business case, and that failure to address the risks associated with carbon emissions may have a seriously detrimental effect on the bottom (and even the top) line, and potentially become a legal liability, can help to underline the importance of implementing the proposals.

5.3 Managing the plan

Whilst the decision to do so is probably outside of the surveyor’s remit it is recommended that an individual is appointed as the corporate energy manager for the organisation. There may be a need for supporting roles in larger organisations but the energy manager will have ultimate responsibility for ensuring the strategy is implemented. It will be important to ensure that the momentum is maintained and new communications and updates will be needed to keep the original engagement with all staff.

5.4 Training and development programmes

There will be a need for training and development for everyone within the organisation. Initially, programmes can ensure that all staff are aware of the strategy and implementation plan. Once the plan is implemented, programmes can relate more specifically to individual responsibilities. It will also be important to ensure there is a reward scheme for recognising and rewarding success.

6 Managing, measuring and reporting performance

It is recommended that all organisations use a robust and credible environmental management system (EMS). This will relate to all areas of environmental performance but is mentioned here since the carbon management strategy will form a key component of this. The EMS will usually be externally certified to a national or international standard and audited by an independent certifier accredited by the United Kingdom Accreditation Service (UKAS). There are three primary recognised standards relevant to the UK.

- ISO 14001: The international standard for environmental management systems, ISO 14001 specifies the features and requirements necessary to identify, evaluate, manage and improve performance. Further details can be obtained from the British Standards Institute.
- EMAS: The Eco Management and Audit Scheme (EMAS) is a voluntary EU wide scheme, which requires organisations to produce a public statement, focuses on legislative compliance and includes ISO 14001.
- BS 8555: This allows phased implementation of an EMS leading to full certification to ISO 14001 or registration for EMAS. Breaking up ISO 14001 into specific stages makes it much easier for organisations with limited resources to put in place an EMS and also enables them to proceed at their own pace. It is primarily (but not exclusively) aimed at small and medium sized enterprises. The Acorn Inspection Scheme can provide accredited certification for each stage of BS 8555 and ensures that data has been independently validated and that the information they provided to stakeholders is both credible and reliable. The Acorn scheme can also be used very successfully in green procurement and can help manage supply chains more effectively. Further details regarding the Acorn scheme can be obtained from the Institute of Environmental Management and Assessment.

The process of monitoring and measuring performance will be an ongoing one. The importance of regular review meetings with all those involved in the implementation projects, including regular reports to senior management, cannot be overemphasised. It is recommended that annual data is collected on direct and tenant emissions, on energy use and on costs, and that progress is regularly reported and communicated both internally and externally. It is recommended that the strategy and implementation plan is updated every year in order to ensure its relevance and that it is rolled forward for the next year, identifying any new opportunities for inclusion.

Performance can be benchmarked against others in the sector. An increasing number of organisations are reporting their emissions and energy usage and this can provide an excellent benchmark. There are a number of options in terms of benchmarks that may be used. It is likely that these will continue to emerge over the coming years. Some suggested options are:

- the Investment Property Databank data;
- the Carbon Trust;

- DEFRA environmental benchmarks;
- Energy Performance Certificates (EPCs) and Display Energy Certificates (DECs);
- Building Regulations;
- the British Property Federation.

It is suggested that benchmarking be in relation to sectors, usage and to building types as well as, importantly, back to the original baseline assessment made prior to the implementation of the carbon management strategy.

Where specific properties, departments or individuals slip behind in their programme or are not able to meet targets, it is recommended that a process is put in place to allow detailed discussion and the development of realistic remedial plans.

The reporting of performance can take place in a number of different ways. This may be included within mandatory reports such as annual reports and accounts. Many organisations now have to produce a business review that will include a discussion of environmental matters, where necessary for an understanding of the business. This can be a useful place to report on carbon emissions and energy performance. Alternatively, reporting may be by way of a voluntary report such as within a corporate social responsibility report, sustainability or stand alone environmental report. It may be the case that where disclosure of performance in a voluntary report is considered to affect the financial performance and shareholder view of the company, performance is also reported in the annual report or business review. Where an environmental management system (EMS) is used, it will provide a useful form of reporting. It is recommended that whichever report type is used the information presented is quantitatively reported.

Further advice on reporting can be obtained from the Carbon Trust.

Appendix A: Case study

Profile of organisation

Organisation: King's College London

Location of business activities: London

Sector in which organisation operates: Public

Employees: 5,000

Real estate:

- Owned: 210,236m²
- Occupied: 202,367m²

Reasons why a real estate carbon management strategy was adopted

In recent years there has been a growing concern relating to climate change, air pollution, depletion of non-renewable resources and the security of supply of carbon based fuels, which have provided a new impetus for prudent management of energy consumption.

King's College London was aware that these factors were having an effect on the environment in which we live; the College saw an adoption of a carbon management strategy as a systematic approach which would allow the College to exploit the opportunities and mitigate the risk to support its core strategy and enhance its reputation.

Objectives of the real estate carbon management strategy adopted:

- the provision of a focus in the process of generating corporate commitment to a low carbon future;
- the setting of high level objectives for a carbon constraint future and providing a platform from which policies and actions may be built; and
- ensuring that adequate data collection, management and reporting tools are in place so that qualifying tangible targets are set, against which progress made can be measured.

How surveyors were involved in developing and implementing the strategy

Providing expertise and knowledge of building techniques, legislation and materials associated with design and the consequence of their environmental impacts.

Successes of the strategy

In the two years since implementation of the carbon management strategy the College has reduced its energy consumption by 8,999 MWh, which has resulted in a 4,935 tonnes reduction in CO₂ emissions, 97 per cent of the target set within the strategy for 2011.

Challenges encountered in implementing the strategy

The main challenges encountered were training and raising awareness of current and impending legislation, and how the strategy could be implemented within financial constraints and time.

Targets and KPIs set in the strategy

The strategy identified a 12 per cent reduction in CO₂ emission from base year by the financial year 2011 (5,087 tonnes). This has been amended to 20 per cent by financial year 2012.

How staff were involved in developing and implementing the strategy

Staff and students have been involved through open meetings and as representatives on an established committee for environmental strategies.

Advice to other organisations

Set a timetable for implementation of the strategy with achievable targets against established KPIs.

Advice to surveyors

Check DEFRA's website regularly for updates, consultation documents and impending legislation.

The importance of a real estate carbon management strategy

The carbon management strategy can be aligned with other environmental strategic business drivers and thus help achieve educational, social, environmental and financial benefits all of which complement the overall growth of the organisation.

For further information please visit:

- www.kcl.ac.uk/content/1/c6/02/56/31/KCLPlan.pdf

Appendix B: Contact details and sources of further information

British Property Federation

7th Floor
1 Warwick Row
London SW1E 5ER
T: 020 7828 0111
F: 020 7834 3442
E: info@bpf.org.uk
www.bpf.org.uk

Building Research Establishment

Bucknalls Lane
Watford WD25 9XX
T: 01923 664000
E: enquiries@bre.co.uk
www.bre.co.uk

The CarbonNeutral Company

Bravington House
2 Bravington Walk
Regent Quarter
Kings Cross
London N1 9AF
T: 020 7833 6000
F: 020 7833 6049
E: shop@carbontrust.co.uk
www.carbonneutral.com

Confederation of British Industry (CBI)

Centre Point
103 New Oxford Street
London WC1A 1DU
T: 020 7379 7400
www.cbi.org.uk

Department for Environment, Food and Rural Affairs (DEFRA)

Nobel House
17 Smith Square
London SW1P 3JR
T: 020 7238 6000
E: helpline@defra.gsi.gov.uk
www.defra.gov.uk

British Standards Institute

389 Chiswick High Road
London W4 4AL
T: 020 8996 9001
F: 020 8996 7001
E: cservices@bsigroup.com
www.bsi-global.com

Carbon Trust

8th Floor
3 Clement's Inn
London WC2A 2AZ
T: 0800 085 2005
F: 020 7170 7020
E: customercentre@carbontrust.co.uk
www.carbontrust.co.uk

Communities and Local Government (CLG)

Eland House
Bressenden Place
London SW1E 5DU
T: 020 7944 4400
E: contactus@communities.gov.uk
www.communities.gov.uk

Department for Business, Enterprise and Regulatory Reform (BERR)

Ministerial Correspondence Unit
1 Victoria Street
London SW1H 0ET
T: 020 7215 5000
F: 020 7215 0105
E: enquiries@berr.gsi.gov.uk
www.berr.gov.uk

Eco Management and Audit Scheme

Institute of Environmental Management and Assessment
St Nicholas House
70 Newport
Lincoln LN1 3DP
E: emas@iema.net
www.emas.org.uk

Energy Saving Trust
21 Dartmouth Street
London SW1H 9BP
T: 020 7222 0101
F: 020 7654 2460
www.energysavingtrust.org.uk
(above address is for England – see website for offices in other parts of the UK)

Environment Agency
National Customer Contact Centre
PO Box 544
Rotherham S60 1BY
T: 0870 850 6506
www.environment-agency.gov.uk

European Commission
2 Storey's Gate
London SW1P 3AT
T: 020 7973 1992
http://ec.europa.eu/index_en.htm

Hadley Centre for Climate Prediction and Research
Meteorological Office
Fitzroy Road
Exeter
Devon EX1 3PB
www.metoffice.gov.uk/research/hadleycentre

HM Treasury
The Correspondence & Enquiry Unit
2/W1
1 Horse Guards Road
London SW1A 2HQ
T: 020 7270 4558
F: 020 7270 4861
www.hm-treasury.gov.uk

Enhanced Capital Allowances
National Advice Service
Written Enquiries Section
Southend on Sea
Alexander House
Victoria Avenue
Southend
Essex SS99 1BD
T: 0845 010 9000
E: Enquiries.estn@hmrc.gsi.gov.uk
www.eca.gov.uk

Envirowise
Building 150
Harwell SIC
Oxfordshire OX11 0RA
T: 0800 585 794
www.envirowise.gov.uk

European Parliament
Correspondence with Citizens
GOL03A012
2929 Luxembourg
Luxembourg
F: +352 43 00 27 072
www.europarl.europa.eu

HM Revenue and Customs
National Advice Service
Written Enquiries Section
Southend on Sea
Alexander House
Victoria Avenue
Southend
Essex SS99 1BD
T: 0845 010 9000
E: Enquiries.estn@hmrc.gsi.gov.uk
www.hmrc.gov.uk

Institute of Business Ethics
24 Greencoat Place
London SW1P 1BE
T: 020 7798 6040
F: 020 7270 4861
E: info@ibe.org.uk
www.ibe.org.uk

Institute of Environmental Management and Assessment

St Nicholas House
70 Newport
Lincoln LN1 3DP
T: 01522 540069
E: info@iema.net
www.iema.net

Intergovernmental Panel on Climate Change (IPCC)

IPCC Secretariat
World Meteorological Organization
7bis Avenue de la Paix
Case postale 2300
1211 Geneva 2
Switzerland
T: +41 22 730 8208
F: +41 22 730 8025
E: IPCC-Sec@wmo.int
www.ipcc-wg2.org

International Organization for Standardization

1 Ch de la Voie-Creuse
Case postale 56
1211 Geneva 20
Switzerland
T: +41 22 749 0111
www.iso.org

Investment Property Databank

1 St. John's Lane
London, EC1M 4BL
T: 020 7336 9200
F: 020 7336 9399
www.ipd.com

Meteorological Office

Fitzroy Road
Exeter
Devon EX1 3PB
T: 01392 885680
F: 01392 885681
www.metoffice.gov.uk

Northern Ireland Executive

Department of Environment
Headquarters
Clarence Court
10–18 Adelaide Street
Belfast BT2 8GB
T: 028 9054 0540
E: doe.internetteam@doeni.gov.uk
www.northernireland.gov.uk

Renewable Energy Association

17 Waterloo Place
London SW1Y 4AR
T: 020 7747 1830
F: 020 7925 2715
www.r-p-a.org.uk

Scottish Parliament

Public Information Service
Edinburgh EH99 1SP
T: 0131 348 5000
F: 0131 348 5601
E: sp.info@scottish.parliament.uk
www.scottish.parliament.uk

Sustainable Development Unit

DEFRA
Nobel House
17 Smith Square
London SW1P 3JR
www.sustainable-development.gov.uk
(includes link to Sustainable Development Commission)

Tyndall Centre for Climate Change Research

Zuckerman Institute for Connective Environmental Research
School of Environmental Sciences
University of East Anglia
Norwich NR4 7TJ
T: 01603 593900
F: 01603 593901
E: tyndall@uea.ac.uk
www.tyndall.ac.uk

UK Green Building Council

The Building Centre
26 Store Street
London WC1E 7BT
T: 0207 580 0623
www.ukgbc.org

US Green Building Council

1800 Massachusetts Avenue NW
Suite 300
Washington DC 20036
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Carbon management of real estate

1st edition

This guidance note has been developed by a partnership including members from the RICS Management Consultancy and Facilities Management Faculties, the Department for Communities and Local Government (CLG) and the Carbon Trust. The recommendations in it have been developed to reflect best practice and are not mandatory for RICS members.

In order for surveyors to advise on the carbon management of real estate, it can prove invaluable to have a full understanding of the business case for managing and reducing carbon emissions. This guidance outlines how carbon management can provide real commercial returns as well as making a significant contribution to climate change.

The guidance note is arranged in sections dealing with:

- understanding the business case and key drivers for carbon management
- developing a carbon management strategy for real estate
- baseline assessments
- financial and carbon emissions appraisal
- implementing and communicating the strategy
- managing, measuring and reporting performance
- sources of further information.

