

# Chapter 1

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## Putting residential development in a sustainable context

### Introduction

In December 2006 the UK Chancellor, Gordon Brown, announced in his pre-budget statement that within a decade all new homes should be carbon-neutral. This is a highly laudable ambition given the growing concerns about climate change and the government's drive to create more than 4 million new homes by 2020.

But what about our ambitions for the new landscape within which this housing will be built? Doesn't it also have a role to play in creating a more sustainable future; shouldn't it also be carbon-neutral or, even better, carbon-negative? The landscape has the potential to reduce the energy demands of the building by sheltering it from cold winds in winter or by creating shade in summer. The design of public and private outdoor spaces can also have a significant bearing on how we live, by encouraging us to adopt a more sustainable lifestyle. As will be discussed in Chapter 2, there are many ways in which a landscape designed with sustainability in mind can make an important contribution to the environmental profile of an entire development. It is equally true that we can negate much of the good work that is currently being achieved in sustainable building design by not applying the same rigour to the design of the landscape. We cannot assume that because a landscape is 'green' it is not also energy-demanding, polluting or wasteful of resources, potentially offering very little to the residents and wildlife that inhabit it.

The aim of this book is to provide a resource that will assist housing developers, landscape architects, architects, planners and other professionals involved in residential housing design to create more sustainable residential environments. The book focuses on the development of a residential landscape sustainability checklist, a tool that can be used to score the

environmental performance of a residential landscape. The checklist was developed as part of a research study which aimed to evaluate the contribution that the landscape makes to the overall sustainable profile of a new residential development, including the public and private realm. Although the checklist was used to quantify the environmental performance of built developments, we believe that its real value is in helping the designer to reflect on the environmental implications of a scheme throughout the design process, from site planning through to detailed design. The checklist was specifically developed to assess new residential landscapes and therefore includes assessment and guidance that are particularly pertinent to this type of development, for example, the provision of private garden space.

However, much of the information which has been gathered to produce the checklist could equally be applied to a wide range of different types of landscape development, including school grounds, business/retail parks and public parks. For example, the checklist considers the environmental impact of landscape materials and specifically focuses on the contribution that new planting can make to promoting biodiversity. Similarly, although the original research on which this book is based, and the piloting of the landscape checklist, took place in England (and the policy context outlined in this chapter focuses on the UK), much of the guidance can be applied elsewhere. In fact, a good deal of the information compiled within the checklist is derived from international research. The authors have disseminated much of the information contained within this book through teaching and seminar presentations throughout the UK, Europe and North America. The information contained in this book allows designers to deal with global problems through practical, local application of knowledge.

The book is organized into four chapters. The first chapter explores definitions of sustainability, specifically landscape sustainability and how this is now framed within planning and Government guidance. It also introduces and discusses initiatives which have aimed to deliver sustainable residential development, including Urban Villages, Millennium Communities and environmental certification.

Chapter 2 identifies opportunities for improving the sustainable profile of new residential developments through landscape planning, design and management. This chapter is broadly divided into two themes. The first theme looks at ways in which resources can be conserved and pollution and waste minimised. For example, this includes how site planning and appropriate planting design and conservation may reduce energy consumption for domestic heating and cooling by creating winter shelter and summer shading. It also looks at the specification and design of hard and soft materials and how these may impact upon the environment. The second theme looks at the existing habitat of each site and how this may be protected and enhanced in order to contribute to ecological diversity and human well-

being. Within this chapter there is an important discussion about the relative merits of using non-native species and their potential role in contributing to biodiversity, especially with regard to disturbed and potentially polluted and damaged urban brownfield sites. The chapter concludes by exploring how sustainable landscape design can contribute to human health and well-being. It looks specifically at garden size and how this may impact on delivering sustainability by, for example, providing adequate space for composting, clothes drying, children's play and possibly even vegetable and fruit gardening.

Chapter 3 begins by reviewing a selection of the assessment tools that have been developed internationally to assess the sustainability of residential developments and identifies their limitations concerning the evaluation of the landscape. This chapter also explains the rationale for adopting the *EcoHomes* assessment tool as the template on which to develop a landscape checklist. *EcoHomes* is the most commonly used tool in the UK for assessing residential sustainability, it is a compulsory assessment for all new housing funded by the Housing Corporation, and it has been instrumental in informing the development of the Government's new Code for Sustainable Homes.

Chapter 4 looks at how the Residential Landscape Sustainability Checklist was piloted and used to assess the sustainability of residential landscapes, for developments that have been promoted as 'sustainable' by some recognised measure. It specifically focuses on two case studies: Greenwich Millennium Village, London, and Childwall, Liverpool. The assessment results for these two developments are discussed in the context of the other sites that were evaluated. The different factors that have either contributed to or discouraged landscape sustainability are then discussed.

The book concludes with a full version of the Residential Landscape Sustainability Checklist. The checklist sets out each of the assessment categories and identifies where credits can be awarded. For each section there is a summary of the literature which has been used to inform the allocation of credits.

## Definitions of sustainable development and sustainable landscape

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### Sustainable development

In 1987 the World Commission on Environment and Development (WCED) published *Our Common Future* (The Brundtland Report). This report brought the concept of sustainable development onto the international agenda for the first time (Sustainable Development, 2000) and defined sustainable development as:

*'development which meets the needs of the present without compromising the ability of future generations to meet their own needs'.*

(WCED, 1987, p 43)

This definition has now been widely accepted, although some authors have sought to add further flesh to it. For example, Barton *et al.* (1995) state that sustainable development is:

*'...about maintaining and enhancing the quality of human life... while living within the carrying capacity of supporting eco-systems and the resource base. Sustainability is about the maintenance of the health of the biosphere and the husbanding of key resources of air, water, land and minerals. The notion of development in the context of sustainability is broader than economic growth or GNP. It implies improvement to the quality of life, health and nutritional status, equity... [and the] perceived quality of the human environment'.*

(Barton *et al.*, 1995, p 8)

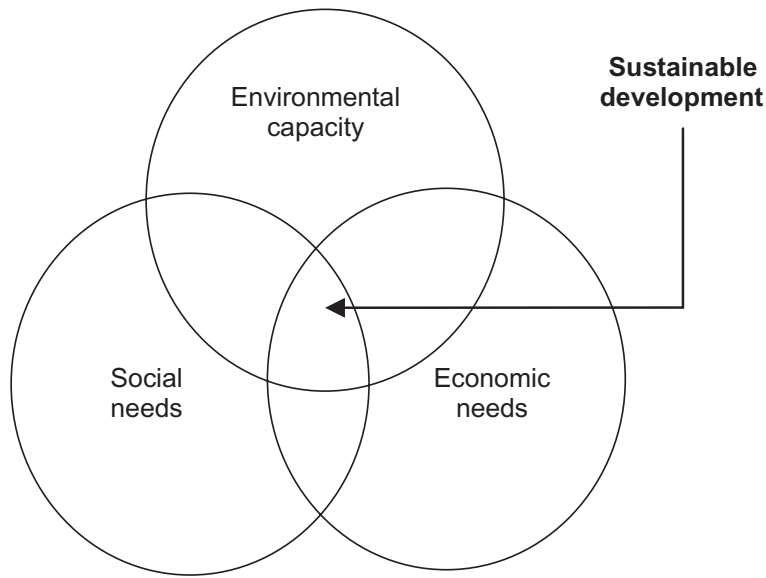
In other words, although developments for industry, commerce, retail and housing are vital to a prosperous economy (HM Treasury, 2004; ODPM, 2005a) they are sustainable only if planned, designed, constructed and managed with sensitivity to people and the environment. Farookhi (1998) simply states that sustainable development is about achieving the right balance, a point which is illustrated by Barton (2000) in Figure 1.1 where environmental, economic and social needs come together.

Other authors have also identified the need for balance and integration when defining sustainable development and aspects thereof (see Table 1.1).

## Sustainable landscape

Landscape architecture has a fundamental relationship with the environment; it starts with 'place' and each place has its own unique qualities and attributes. The development of the landscape, especially in cases where it has been damaged through previous activities, may enhance the environmental contribution of that place; but it may also diminish it. There is a danger that those who work in the landscape profession will assume that the places they design and build are implicitly 'eco-friendly' (Thompson & Sorvig, 2000). However, designed landscapes frequently overuse energy, water, pesticides and fertilisers and non-renewable materials, and often do more to eliminate biodiversity than to preserve or enhance it.

*'When self-sustaining ecosystems are converted to built landscapes, the hidden costs may include soil loss, degradation of*



**Figure 1.1** Sustainable development fulfils economic needs, but also fulfils social needs and works within limits set by the environment. (Reproduced with permission from Barton, H. (2000) *Conflicting perceptions of neighbourhood*. In: *Sustainable Communities: The Potential for Eco-Neighbourhoods*. H. Barton (Ed.) London: Earthscan.)

*'water, introduction of toxic and non-renewable materials, and un-sustainable energy use.'*

(Thompson & Sorvig, 2000, p 1)

We may delude ourselves into thinking that because the 'landscape' of a development includes plants, then by its very nature that landscape must be a force for good in creating sustainable environments. Sadly, this is not always true. Putting aside the argument of whether we should be using native or ornamental species, plant production can require huge amounts of resources in energy for heating and transport, irrigation and fertilisers. If there is a danger that even the vegetation we use is potentially more detrimental to the environment than it is beneficial, it might be argued that:

*'... most products of landscape architecture are simply not sustainable by any definition'.*

(Thayer, 1989, p 102)

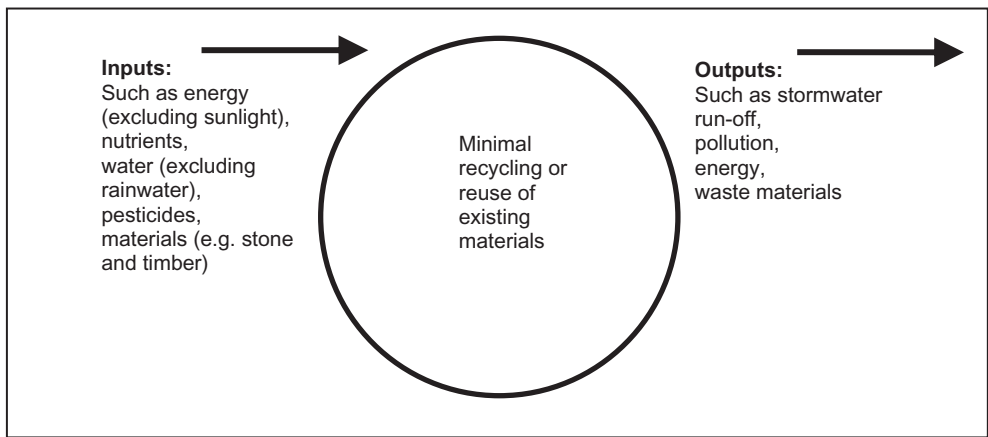
In considering the environmental impact of any designed landscape it may be helpful to think about them as a system in which there are inputs, outputs and internal cycling (Dunnett & Clayden, 2000). An unsustainable landscape of the type described above can be viewed as 'greedy' and 'wasteful' with requirements for high resource inputs, minimal internal cycling and large waste releases (Figure 1.2).

**Table 1.1** Definitions of sustainable development and aspects thereof. References: \*Barton (2000); \*\*Ekins (2000); #Forman (1995); †Elkin *et al.* (1991); ‡Williams *et al.* (2000); ††Smith *et al.* (1998); ‡‡DETR (2000a).

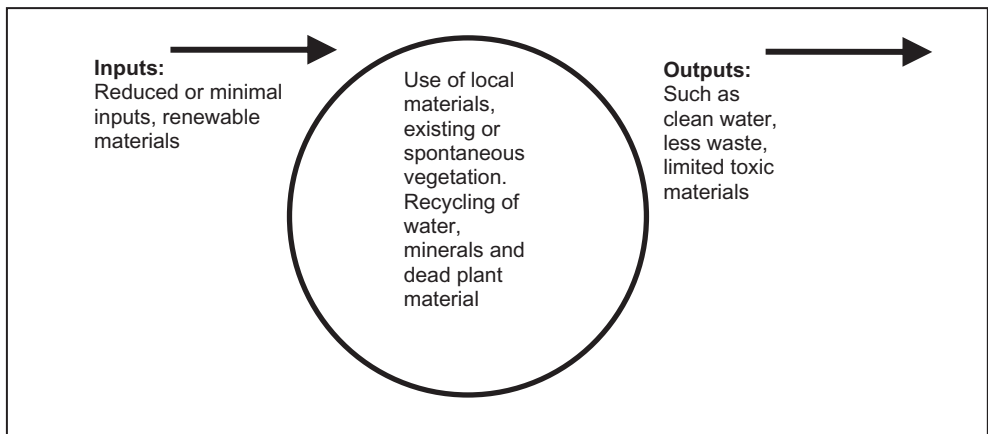
Specific Aspect of Discussion	Definition
Sustainable development	Solutions that successfully marry human welfare and ecological robustness.* Provides a simultaneous increase in the quality of human life and the maintenance of important environmental functions. It is therefore a process involving the improvement of the human condition in a context of environmental sustainability.**
Sustainable environment	An area in which ecological integrity and human needs are concurrently maintained over generations.#
Sustainable cities	User-friendly, resourceful and energy efficient . . . a place for living.† The city functions within its natural carrying capacity, is user-friendly for its occupants and promotes social equity.‡
Sustainable built environments	Provided for through environmental 'interest' rather than 'capital', does not breach critical environmental thresholds, and develops a sense of equity and social justice.††
Sustainable communities	Where human welfare and the environment are reconciled and integrated, rather than traded off against each other.‡‡

A sustainable landscape will aim to minimise the inputs of non-renewable resources and energy, maximise levels of internal recycling and improve the environmental quality of all outputs where possible. This alternative system is presented in Figure 1.3.

Although the focus of this book is how we might improve the environmental sustainability of residential landscapes, it is also important to remember that to achieve the wider goal of sustainable development, this must also be balanced with meeting other sustainable objectives, including social and economic needs. A sustainable landscape is one that balances human needs and the environment.



**Figure 1.2** A system approach to an unsustainable landscape. (Reproduced with permission from Dunnett, N. & Clayden, A. (2000) Resources: the raw materials of landscape. In: *Landscape and Sustainability*. J.F. Benson & M.H. Roe (Eds) London, Taylor & Francis Ltd.)



**Figure 1.3** A system approach to a sustainable landscape. (Reproduced with permission from Dunnett, N. & Clayden, A. (2000) Resources: the raw materials of landscape. In: *Landscape and Sustainability*. J.F. Benson & M.H. Roe (Eds) London, Taylor & Francis Ltd.)

The social dimension is extremely important. A designed landscape may tick all the right boxes from an environmental perspective but may also appear unkempt or even potentially threatening to the community it serves. We need to find ways of improving the connectivity between people and their environment (Ruff, 1982). Only by improving these connections and our understanding of the importance of the natural processes that are at work are we likely to conserve and protect our local environments, to enjoy using them but, perhaps most importantly, to make the kind of changes in

our lifestyles necessary to minimise our own environmental impact. Through design and a growing awareness of the effect that our actions have on the environment, we might find ways of encouraging people, for example, to leave their cars at home and either walk or cycle to work.

Sustainable landscapes are therefore those which:

*'... contribute to human well-being and at the same time are in harmony with the natural environment, work with native landscape conditions, do not deplete or damage other ecosystems, (and) conserve valuable resources such as water, soil, nutrients (and) energy'.*

(CELA, 1988, cited in Thayer, 1994, p 237)

## Sustainable development in English planning and development

Any discussion of sustainable development needs to be placed within the context of an evolving set of Government development policies and strategies. For more than a decade, the concept of sustainable development has been taking an ever more central role in planning and development in the UK. Following acts of Parliament in 1999 and 2000, the Scottish Executive, the National Assembly for Wales and the Northern Ireland Office were formed as devolved governments, each responsible for setting individual (but co-ordinated) planning systems with separate White Papers and circulars, and for overseeing the revision of their own planning policy guidance. Since devolution, the UK Government retains these responsibilities for England alone.

The UK Government was one of the first to act on the recommendations of the 1992 United Nations Conference on Environment and Development (the Rio Earth Summit). In 1994 it published its own cross-departmental national strategy, *Sustainable Development: The UK Strategy* (HM Government, 1994), which required local authorities to work with local communities to implement sustainability through Local Agenda 21 strategies (Bhatti, 1996; Patterson & Theobald, 1995). It has been suggested that by the mid-1990s the concept of sustainable development had become the central plank of the UK Government's planning policies (McGhie & Girling, 1995). One of the model components for Local Agenda 21 strategies was the assimilation of these national policies into local authority planning policies (DEFRA, 1998).

In 1999, a new national strategy, *A Better Quality of Life – A Strategy for Sustainable Development for the UK* (HM Government, 1999), was published. The four aims of the strategy suggested a holistic vision of sustainable development similar to those in Table 1.1:

- social progress which recognises the needs of everyone
- effective protection of the environment
- prudent use of natural resources
- maintenance of high and stable levels of economic growth and employment.

The 1999 strategy introduced 147 sustainable development indicators, allowing performance to be reviewed and reported annually (HM Government, 1999). These indicators were published in 1999 (DETR, 1999). Following devolution, the Welsh, Scottish and Northern Irish devolved governments interpreted the UK strategy through their own planning systems.<sup>1</sup> In England, in the same year, there was also the publication of the Urban Task Force report, *Towards an Urban Renaissance* (Urban Task Force, 1999). In response, the Government published its urban White Paper, *Our Towns and Cities: The Future – Delivering an Urban Renaissance*, which, together with its sister rural paper, *Our Countryside: The Future – A Fair Deal for Rural England*, placed sustainable development principles at the heart of Government policies (DEFRA, 2000; DETR, 2000b). At the same time, many of the planning policy guidance notes (PPGs) for England were revised, with a view to further strengthening the position of sustainable development in development plans and within the development control process. For example, the revised *PPG 1: General Policy and Principles* stated that:

*‘A key role of the [English] planning system is to enable the provision of homes and buildings, investment and jobs in a way which is consistent with the principles of sustainable development’.*

(DTLR, 2001a, p 1)

In 2003, the Government launched a new sustainable communities plan for England: the White Paper *Sustainable Communities: Building for the Future* (ODPM, 2003a). The plan looked to build on the previous policies within the urban and rural White Papers, by setting out a programme of policies and spending with which to address community problems. Foremost of these was the pressing shortage of affordable housing in the South East and abandonment of housing elsewhere. However, the plan also stressed the need for decent homes and a good-quality local environment in all English regions (ODPM, 2003a).

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<sup>1</sup> Commitment to sustainable development is a common feature of each of the devolved planning systems in Wales, Scotland and Northern Ireland. In Wales, the assembly states that sustainability lies at the heart of the Welsh planning process (NAW, 2002). *Scottish Planning Policy Note 1: The Planning System* (SPP 1) highlights the Scottish planning system’s duty to ensure sustainable development (SE, 2002). Finally, in Northern Ireland, *Planning Policy Statement 1: General Principles* again sets out a commitment to sustainable development through planning (DoE [NI], 1998).

In 2004, the Planning and Compulsory Purchase Act made sustainability appraisals mandatory for development plans and supplementary planning documents in England, Wales and Northern Ireland<sup>2</sup> (ODPM, 2004). This will ensure that sustainable development principles continue to be integrated into English development plans, and other local planning policy documents, irrespective of any commitment previously made by authorities under their Local Agenda 21 strategy.<sup>3</sup>

In January 2005 the Government launched revised over-arching planning guidance for England to replace PPG 1. *Planning Policy Statement 1: Delivering Sustainable Development*, as the title suggests, continues the assimilation of sustainable development into the English planning system.

*'Sustainable development is the core principle underpinning [English] planning.'*

(ODPM, 2005a)

PPS 1 builds its policies squarely on the four aims of the 1999 UK strategy given above, and emphasises the key role planning must take in the fulfilment of the Government's sustainable communities plan.

In March 2005, in response to the 2002 UN World Summit on Sustainable Development in Johannesburg, the UK Government launched its latest national sustainability strategy, *Securing the Future: Delivering the UK Sustainable Development Strategy* (HM Government, 2005). The policies in the new strategy only apply to England, though the Government has tasked the devolved governments of Wales, Scotland and Northern Ireland with creating their own strategies, to sit within a common framework of shared goals and indicators (HM Government, 2005). The UK strategy again emphasises the importance of placing sustainable development at the heart of the planning system and within all planning policy guidance. The four aims from the 1999 strategy survive into the new document but the suite of UK sustainable development indicators was rationalised from 147 to 68.

The strategies outlined above do not provide detail as to how sustainable development is to be achieved. However, they have been well supported through Government-sponsored guidance and advice for English planners, developers and designers. Table 1.2 describes some of the supporting texts that have been made available over the last ten years by Government and associated agencies.

<sup>2</sup>Although having devolved powers in term of setting planning policy, publishing White Papers and circulars, the National Assembly for Wales and the Northern Ireland Office do not have primary legislative powers. Acts of UK Parliament therefore remain the source of primary legislation for these devolved countries (though not Scotland, which does have primary legislative powers).

<sup>3</sup>Although over 400 Local Agenda 21 strategies had been published in the UK by 2000, they are no longer currently pursued by all local authorities (HM Government, 2005).

**Table 1.2** Government-sponsored texts supporting sustainable planning policy in England. \*The Government's national regeneration agency; \*\*a non-departmental public body sponsored by Government; †the Government-sponsored agency for promotion of design quality.

Reference	Source/Sponsor	Title/Description
Barton et al. (1995)	Local Government Management Board (produced as part of the Local Agenda 21 Initiative)	<i>Sustainable Settlements: A Guide for Planners, Designers and Developers.</i> A comprehensive guide intended to help stakeholders convert the theory of sustainable development into action. Areas covered: architectural design; landscape design; site layout and urban design.
DETR (1998)	Department of the Environment, Transport & the Regions	<i>Building a Sustainable Future: Homes for an Autonomous Community.</i> Sets out the basic requirements for a sustainable community, including architectural design and site layout.
Sustainable Development (2000)	Department of the Environment, Transport & the Regions	<i>Building a Better Quality of Life. A Strategy for More Sustainable Construction.</i> Identified priorities for action within the construction industry, if the challenge of the 1999 UK sustainability strategy was to be met.
English Partnerships/Housing Corporation (2000)	English Partnerships* and the Housing Corporation**	<i>The Urban Design Compendium.</i> A guide for local authorities, developers and designers on achieving high-quality, more sustainable urban landscape design and building layout in line with the Urban Task Force Report of 1999
DETR/CABE (2000)	Department of the Environment, Transport & the Regions and the Commission for Architecture & the Built Environment†	<i>By Design. Urban Design in the Planning System: Towards Better Practice.</i> Scope broadly similar to the above document.
DTLR/CABE (2001)	Department for Transport, Local Government & the Regions and the Commission for Architecture & the Built Environment†	<i>Better Places to Live By Design: A Companion Guide to PPG 3.</i> A guide for local authorities, developers and designers on achieving high-quality, more sustainable residential landscape design and building layout in line with the Urban Task Force Report of 1999 and the revised PPG 3 of 2000.

**Table 1.2** *Continued*

Reference	Source/Sponsor	Title/Description
ODPM (2003b)	Office of the Deputy Prime Minister	<i>Planning for Sustainable Development: Towards Better Practice.</i> A guide for planners on incorporating sustainable development into local plans, and advice on spatial strategies to deliver sustainable objectives such as reduced car use, nature conservation and energy conservation.
CABE (2005)	Commission for Architecture & the Built Environment	<i>Creating Successful Neighbourhoods: Lessons and Actions for Housing Market Renewal.</i> Collates case studies and good practice advice for regeneration of areas of England's North and Midlands which have a recent history of housing abandonment and housing market failure. Includes advice on high design quality and sustainability in housing regeneration.

However, as pointed out by the World Wildlife Fund for Nature (WWF), to be fully effective in encouraging sustainable development, the planning system needs to be complemented by the building regulations, which control the detailed design and construction of buildings and associated services and spaces (WWF, 2004a). In January 2004 a private member's bill, the *Sustainable and Secure Buildings Bill*, was presented to Parliament. The bill aimed to make buildings and associated services and structures more sustainable (and safer), by bringing sustainability issues into the building regulations (WWF, 2004b). The bill received cross-party support, as well as the backing of the Sustainable Buildings Task Group (SBTG), a body formed in 2003 under the aegis of the ODPM (now Communities and Local Government), DEFRA and DTI to advise Government on sustainability in English development (SBTG, 2004). In September 2004, the bill received Royal Assent and became law for England and Wales. The bill gives new powers under the Buildings Act 1984, so that green issues can be addressed through the building regulations.

### The key role of housing in sustainable development

Appropriate new housing is crucial to delivering sustainable development in England and the rest of the UK. Of the 147 national indicators introduced

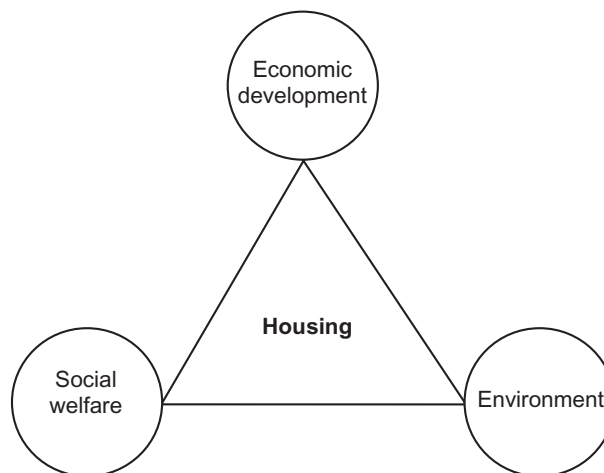
as part of the UK Government's 1999 sustainable development strategy, 70 could be linked to housing and community issues (Ekins, 2000; Housing Corporation, 2002a; WWF, 2004c). When this list was revised in 2005 down to 68 indicators, 33 of the new indicators continued to be directly related to housing and community issues. This reinforces the pivotal role that housing plays in achieving a sustainable society. Edwards (2000) highlights the importance that is attached to housing by seeing it as the central element which links together economic development, environment and social welfare (see Figure 1.4). He states that:

*'No society is balanced and in harmony with nature unless housing is sustainable. [Also] housing is central to perceptions of quality of life [and] is the agent that cements communities'.*

(Edwards, 2000, p 12)

Ekins (2000) has also suggested that housing is an activity with deep connections to sustainable development, and listed the following reasons for this connection.

- Housing is a basic human need. Its quality, price and availability are crucially important to quality of life.
- The location, planning, layout and design of housing make an important contribution to community spirit.



**Figure 1.4** The importance of housing in a sustainable society. (Edwards, B. (2000) Sustainable housing: architecture, society and professionalism. In: *Sustainable Housing: Principles and Practice*. B. Edwards & D. Turrent. (Eds) London: T & F, Spon.)

- The siting of houses and the materials from which they (and their environments) are made, and the uses their occupants make of such resources as energy and water, all have major environmental implications.

With regard to the latter point, Table 1.3 provides a summary quantification of some of the environmental impacts of house-building and occupation in the UK as a whole. It gives an indication of the impact which housing has on the environment in terms of both the consumption of finite resources and pollution from domestic waste and energy consumption.

Housing also contributes to impacts of the wider construction industry, described by Howard (2000) as the largest consumer of resources in the UK. A summary of the impacts of the UK construction industry as a whole (where figures could not be found for housing alone) is given in Table 1.4.

Housing is also crucial to the economy of the UK as a whole (HM Treasury, 2004) and England specifically (ODPM, 2005a). As already noted, housing is a key component of quality of life; poor-quality housing causes harm to the physical and mental health of residents and is also understood to have major impacts on educational performance and crime rates (WWF, 2004c). Simply put, our homes have significant environmental, social and economic impacts throughout their lifetime. In recognising this point, the Government has tried to specifically address this through planning guidance. *PPG3: Housing* was revised in 2000 and the creation of sustainable residential

**Table 1.3** Summary of environmental impacts associated with UK housing. References: WWF (2004d); Rao *et al.* (2000); Howard (2000).

Impact	Quantification
Timber use	Approx. 20 million m <sup>3</sup> in UK housing construction p/a, over 98% being imported from northern Europe or Canada/USA.
Aggregate use	50 tonnes of aggregate per new home, with recycled materials accounting for only 17% of the current market.
Energy use/CO <sub>2</sub> emissions	Housing in use accounts for 27% of UK's emissions p/a. Also construction of homes (manufacture and transport of materials) accounts for 3% of the UK's total energy consumption.
Domestic refuse	34 million tonnes p/a, with only 12% recycled.

**Table 1.4** Summary of environmental impacts associated with UK construction industry. References: WWF (2004c,d); Rao *et al.* (2000); Howard (2000); Smith *et al.* (1998); Skinner (1998).

Impact	Quantification
Raw resources	Figures in million tonnes p/a: aggregates, 160; concrete aggregates, 100; road-stone, 80; iron/steel, 25; cement, 20; masonry, 15. In total approx. 6 tonnes of building materials are used per person, p/a in the UK.
Construction and demolition waste	Approx. 70 million tonnes p/a in UK; estimates vary as to the amount recovered, from one-fifth to one-third.
Energy use/CO <sub>2</sub> emissions	10% of UK energy use associated with the manufacture of all construction materials; 22% of UK CO <sub>2</sub> emissions arise from people travelling between buildings.
Other pollutants	Manufacture of construction materials accounts for 0.7% of volatile organic compounds (VOCs), 2.5% of NO <sub>x</sub> and 8% of SO <sub>2</sub> emissions.
Land use	Projections of 12% UK urbanisation by 2016.
Water use	Not quantified, but described as 'wasteful' (WWF, 2004c).

environments was set as one of the key objectives (DETR, 2000c). The link between sustainability and housing was further reinforced by the 2003 sustainable communities plan for England, which stated:

*'It will be essential for all development, especially new housing developments, to respect the principles of sustainable development and address the potential impacts on the environment alongside social and economic goals'.*

(ODPM, 2003a, p 30)

As well as planning policy, the Government and its agencies have considered aspects of residential sustainability in many of their guidance texts and the Government has included sustainability as one of its ten housing quality indicators – its voluntary assessment tool for English housing quality (DTLR, 2000). The importance of new housing to a sustainable England has been intensified by the sheer numbers of households that the country must accommodate in the relatively near future. Because of societal changes

which include growing number of single-person households, rising personal wealth and increasing life expectancy, the Government predicts that around 4 million additional homes will be needed in England by 2021 (DETR, 2000b). The pressure for new housing is especially high in the South East, where around 1 million homes are required by 2016 (HM Government, 2005). However, current rates of house-building are not sufficient to deliver these targets<sup>4</sup> (HM Treasury, 2004; ODPM, 2003a). Rao et al. (2000, p 1) have stated that:

*[Housing] developers face the often conflicting demands of providing large numbers of new homes whilst maintaining adverse environmental effects’.*

The challenge to English housing developers is, if anything, more complicated: the large numbers of new homes will have to be delivered at an increased rate of construction, whilst also taking account of social well-being and quality of life for residents, as well as environmental effects. The compliance of the house-building sector is crucial to meeting national sustainable development objectives. However, despite the long assimilation of sustainability into planning and development in the UK, even by 2002 there may have been only a limited impact on the way planning is applied to house-building, and there is still a general reticence to embrace sustainability within the UK house-building sector (WWF, 2004c).

In England, house-building is dominated by two types of tenure: private companies and registered social landlords (RSLs) (Table 1.5). The private companies account for approximately 90% of all house-building, with the

**Table 1.5** The percentage of permanent households completed in England by tenure since 2000. Based on Government housing statistics drawn from NHBC and English local authority planning statistics (ODPM, 2005b).

Financial Year	Private Companies	Registered Social Landlords	Other
2000/2001	87%	12%	1%
2001/2002	89%	11%	<0.05%
2002/2003	90%	10%	0.1%
2003/2004	90%	10%	0.1%

<sup>4</sup>In 2003 it was reported that house-building has fallen steadily in England from a peak of 350,000p/a in the late 1960s to below 140,000p/a in the mid 2000s. Current projections predict that 155,000 additional English households will be required p/a to meet current targets (ODPM, 2003a).

remaining 10% built by RSLs for renting to tenants. Although dwarfed by the number of houses built privately, RSLs still account for around 20,000 new-build households per annum and will play a major role in the achievement of a sustainable future in England (Housing Corporation, 2002a). RSLs consist mainly of housing associations, but also trusts and 'not for profit' companies that are registered with the Housing Corporation, the non-departmental body sponsored by Government to regulate and promote the public housing sector in England (Housing Corporation, 2002b). The corporation also funds most (but not all) public housing development in England (Priaulx, 2004).

Clearly it is the activities within these two tenures which will be the key to delivering a future of more sustainable housing and communities in England. Despite reports of a disappointing response from the general house-building sector to date, one would hope that the ongoing assimilation of sustainable development principles into the English planning system and building regulations will effect an improvement. However, there are development concepts and initiatives which proponents claim have already resulted in more sustainable private and RSL-built housing in England. What is more, these concepts and initiatives look set to play an important part in encouraging sustainable housing in the future and guiding Government policy.

## Current concepts and initiatives for delivering sustainable homes in England

### *Urban Villages and Millennium Communities*

In his personal treatise on architecture, *A Vision of Britain*, HRH The Prince of Wales proposed a model of residential communities called 'Urban Villages', which offer an alternative vision of urban development and regeneration (HRH The Prince of Wales, 1989). In 1989, in order to promote this vision, the Prince brought together a small group of like-minded developers, investors, planners and designers to form the Urban Village Group (UVG) (Biddulph *et al.*, 2003). In 1992 the UVG launched the *Urban Villages Report*, which detailed the Urban Village concept, described historical precedents and set out a framework for achieving Urban Village development (Aldous, 1992). The report proved popular and was revised by the renamed Urban Villages Forum (UVF) in 1997 to include case studies of built and ongoing Urban Villages (Aldous, 1997). The key requirements of the Urban Village concept which were set out in the two editions of the report are summarised below (see Huxford, 1998; McArthur, 2000; Tait, 2003; Tait *et al.*, 2001).

- Mixed-tenure housing
- Interspersed with local facilities, employment opportunities and open space
- Well designed/high design quality
- Based on walking/reduced car reliance
- High density/compact
- Environmentally benign
- Sense of place
- Community integration and involvement

By comparing these key requirements with the definitions presented in Table 1.1, it would appear that the Urban Village model corresponds well with the aims of sustainable development. In particular, there is much overlap with the definition of sustainable housing provided by Edwards (2000) which also includes high density, mixed use, mixed tenure, public transport, open space for ecology and social interaction, resource conservation and integration of natural habitats with housing. In fact, in the second edition of the *Urban Villages Report*, the UVF stated that:

*'The twin objectives [of an Urban Village] must . . . be to ensure a sustainable global environment; and to provide local environments that are . . . more sustainable'.*

*'The term "Urban Village" . . . is now in common use in any debate on sustainable development'.*

(Aldous, 1997, pp 25, 11)

The Urban Village concept has therefore become linked with the notion of sustainable development, by presenting itself as a way of creating more environmentally and socially sustainable urban communities (Biddulph *et al.*, 2001). What is more, private house builders and RSLs are often the developers responsible for delivering Urban Villages. Of the 14 developers listed in the case studies in the revised *Urban Villages Report* in 1997, 12 were either private housing developers or RSLs (Aldous, 1997). This is not surprising, as although mixed use is one of the ideas underpinning the Urban Village concept, housing is the dominant land use in Urban Villages (Biddulph *et al.*, 2003; Tait *et al.*, 2002).

Although the Urban Village concept has been criticised for being utopian and nostalgic (Biddulph *et al.*, 2003), advocates of Urban Villages have moved from the fringe of the UK planning fraternity (McArthur, 2000) and Urban Villages have become popular (Biddulph, 2000; Tait, 2003). The Government's support for Urban Villages is likely to have been crucial in this. According to Biddulph *et al.* (2003), this support was won initially through intense lobbying from the Urban Village Forum in the mid-1990s. Furthermore, the 1999 Urban Task Force report to Government

borrowed heavily from the Urban Village concept (Biddulph, 2000) and the 'urban renaissance' outlined in the subsequent White Paper inevitably provided a fertile environment in which the Urban Village concept could flourish.

Through effective lobbying and a close affiliation with the ideas of the urban renaissance, the Urban Village concept became referenced as a preferable mode of development for urban sites in England in both the 1997 and 2001 revisions of *PPG1: General Policy and Principles* (DoE, 1997; DTLR, 2001). Urban Villages also appeared in Government-endorsed good practice guides on residential design (DTLR/CABE, 2001) and examples appeared within the popular press as models of 'greener living' (Siegle, 2003). However, there is no reference to Urban Villages in PPG1's 2005 replacement. Nevertheless, *PPS1: Delivering Sustainable Development* does describe the delivery of sustainable communities as the key aim of English planning (ODPM, 2005a), and the Government's description of sustainable communities has many similarities with that of Urban Villages (Table 1.6). This is perhaps unsurprising given that the Urban Village Forum (now part of the Prince's Foundation) contributed to the drafting of the Government's sustainable communities plan for England.

Although the term 'Urban Village' may have fallen out of favour in planning policy, Table 1.6 demonstrates that the concept has been perpetuated (though 're-badged') in the Government's current vision for sustainable communities.

In 1997, John Prescott, the then Secretary of State for the Environment, challenged the development industry to create a model for 21st-century urban living (DETR, 2000a). This was the start of the Millennium Villages Programme (now termed Millennium Communities Programme), which is co-ordinated and facilitated by English Partnerships. To date, the programme has resulted in seven schemes throughout England which include: Greenwich, London; Allerton Bywater, West Yorkshire; Milton Keynes; Manchester; King's Lynn; Telford and Hastings. The aim of the programme is to provide mixed-tenure residential development interspersed with community facilities such as shops and schools, which can be seen by others in industry as exemplars of sustainable housing and community development (DETR, 2000a; ODPM, 2003). There are a number of key similarities between Millennium Communities and Urban Villages: both should feature mixed-tenure housing with community facilities; should be built to high density; be walkable and not dominated by cars; should be designed to a high quality with a sense of place; and should be environmentally friendly. Like Urban Villages, Millennium Communities are predominantly residential; the programme's emphasis is on the planning, design and construction of new sustainable homes, and they are being developed by consortia of private house-builders and RSLs (English Partnerships, 2005).

**Table 1.6** Points of similarity between the key requirements of an Urban Village and the Government's requirements for a sustainable community. \*References: Tait (2003); Tait *et al.* (2001); McArthur (2000); Huxford (1998). †Taken from ODPM (2003a, p 4).

Key Requirements of an Urban Village*	Key Requirements of a Sustainable Community†
Mixed-tenure housing	Well-integrated mix of decent homes of different types and tenure.
Interspersed with local facilities, employment opportunities and open space	Good public local services, including community facilities and well-designed public green space.
Well designed/high design quality	Places where people want to live and will continue to want to live.
Based on walking/reduced car reliance	Basic amenities provided in the neighbourhood, good public transport and other transport infrastructure within the community and linking to other centres.
High density/compact	Minimise use of land.
Environmentally benign	Minimise use of all resources and a healthy local environment.
Sense of place	Sense of place.
Community integration and involvement	Engagement and participation by local people, especially in the planning, design and long-term stewardship of their community.

English Partnerships currently requires environmental certification through the Building Research Establishment Environmental Assessment Method (BREEAM) (which is discussed more fully below) for all housing built on their land, including all seven of the Millennium Communities. Urban Villages such as Hulme in Manchester and Poundbury in Dorset have also undergone BREEAM certification for housing (Duchy of Cornwall, 1999; Hulme Regeneration Ltd, 1994). However, the use of this certification method has had an impact beyond Urban Villages and Millennium Communities. The following section briefly discusses the evolution and adoption of BREEAM for housing (including *EcoHomes*) by private housing developers and RSLs in England.

### *BREEAM certified housing*

The Building Research Establishment Environmental Assessment Method (BREEAM) developed by the Building Research Establishment (BRE) is one of the more established environmental certification schemes that enables owners or occupants to gain recognition for the building's environmental performance. Initially created to set out environmental objectives for new UK offices in 1990, BREEAM was quickly modified for use with regard to supermarkets and houses (Guest, 1991). In 1995 the BRE replaced *BREEAM for New Homes* with the *Environmental Standard – Homes for a Greener World* (Prior, 1995). However, for various reasons, including the pass/fail nature of the assessments, the *Environmental Standard* was not widely taken up by house builders.

In order to facilitate the next revision of BREEAM for housing, between 1997 and 1998 the BRE's Centre for Sustainable Construction carried out research, whereby a wide range of interest groups from the UK's environmental and construction sectors were asked which areas of sustainability they considered most significant, and their relative importance (Rao et al., 2000). This research was used to devise the current version of BREEAM for housing, *EcoHomes*, which was launched in April 2000. Rather than assessing housing schemes on a pass/fail basis, *EcoHomes* instead applied research to provide weighted category scores, which are then summed to give a single percentage score and an appropriate rating on a scale of 'Pass' to 'Excellent' (Rao et al., 2000). *EcoHomes* claims to certify on the basis of:

*'... the environmental performance of a residential development, looking at the environmental performance of the individual homes and of the development as a whole'.*

(Rao et al., 2000, p 6)

Reflecting this claimed holistic vision, reviews in the popular press of developments that have achieved a high *EcoHomes* rating have described the certification as demonstrating 'environmental friendliness' for the whole estate, rather than the individual buildings (Weaver, 2003).

From a private housing developer's point of view, one of the key benefits of achieving *EcoHomes* certification, and previously the *Environmental Standard* award and the *BREEAM for New Homes* certificate, is that this allows them to differentiate their developments from other, non-sustainable competitors and thus improve marketability (BRE, 1991, 1995; Rao et al., 2000). Though the marketing benefits of certification are arguably less important in the public sector, the broader benefits of BREEAM for public housing, such as reduced fuel bills for low-income residents, are made explicit in *EcoHomes*, and several RSLs were involved in the steering groups for both *EcoHomes* and the *Environmental Standard* (BRE, 1995; Rao et al., 2000).

In April 2003, the Housing Corporation made it mandatory for all RSL housing schemes it funds to achieve an *EcoHomes* certificate (Housing Corporation, 2002a). Even prior to this, the English public housing sector had widely adopted the various revisions of BREEAM for housing.

Although *EcoHomes* has been widely adopted by RSLs, take-up in the private house-building sector has been much slower (Priaulx, 2004). However, as noted earlier, sustainability appraisal of local plans by English, Welsh and Northern Irish local authorities is now compulsory, and an increasing number of councils are setting *EcoHomes* certification as part of Supplementary Planning Guidance to be applied to all new housing (Priaulx, 2004).

Following the 'Better Buildings Summit' in 2003, the Government set up a Sustainable Buildings Task Group which had the job of identifying cost-effective improvements in the quality and environmental performance of buildings. A report from this committee, entitled *Better Buildings – Better Lives*, amongst other recommendations proposed the establishment of a code for sustainable buildings to be based on, and run in parallel to, BREEAM/*EcoHomes* with a high BREEAM/*EcoHomes* achievement being the entry level (SBTG, 2004). This met with the Government's approval and the code, which is to be introduced on a voluntary basis, is now part of its five-year strategy for sustainable communities in England (ODPM, 2005c).

In December 2006 the Government released the new Code for Sustainable Homes which is set to replace *EcoHomes* for the assessment of new housing. A new version of *EcoHomes*, *EcoHomes XB*, was also released in 2006 by the BRE and has been developed to enable the assessment of existing housing stock (BRE, 2006). In relation to the Code for Sustainable Homes, there is an ongoing initiative to produce a Regional Sustainability Checklist for Developments. The new regional checklist will take account of the wider landscape implications of development on the environment and will use regional planning and sustainable development policy.

## What impact have these initiatives had on delivering sustainable residential communities?

Despite the Government's drive towards sustainable development in England, and the key part that housing will play in this, there has been surprisingly little research into existing examples of English housing that claims to be sustainable. Key questions of how far these schemes deliver on their claims of sustainability, and the reasons for successes and failures, remain largely unanswered. This is particularly surprising given that the Urban Village concept, the Millennium Communities Programme and BREEAM (specifically *EcoHomes*) certification responsible for these schemes continue to be assimilated into the policies and actions of central and local government and their agencies.

Urban Villages and Millennium Communities are predominantly residential developments. However, despite touching on related areas such as open space provision and urban design quality, previous evaluation studies of English Urban Villages and Millennium Communities within the DETR – commissioned *Millenium Vilages and Sustainable Communities Report* (DETR, 2000a) have not provided a comprehensive and detailed critique of the sustainability of the residential landscape provided by the developers.

The BRE's *EcoHomes* claims to be a 'development-based' rather than 'building-based' certification method. However, this is true only to a very limited extent; a more detailed examination of the assessment criteria within *EcoHomes* reveals that they are biased towards building issues. Although *EcoHomes* credits are awarded for the use of relatively benign landscape boundaries and surfacing within the housing curtilage, and provision of semi-private space and safe pedestrian routes, the only landscape-related issue to attract significant attention is site ecology (see Rao *et al.*, 2000) and many important aspects of landscape design, procurement and management continue to be omitted. Nevertheless, this is an improvement on 1995's *Environmental Standard* and 1991's *BREEAM for New Homes*, which only considered site ecology in addition to building issues (see BRE, 1991, 1995). However, all three versions of BREEAM for housing contain an appendix of landscape sustainability issues that the assessed developer may additionally wish to consider; for example, provision of cycle routes, grey water recycling, wind shelter and solar shading by planting, garden compost bins, wildlife corridors, water-permeable landscape and traffic calming (see BRE, 1991, 1995; Rao *et al.*, 2000).

However, none of these issues are currently included in BREEAM's assessment criteria. Therefore, housing certified through BREEAM does not claim to have sustainable landscapes *per se*. Nevertheless, it would be reasonable to suppose that developers who are building certified schemes might be more aware of sustainability than those who are not<sup>5</sup> and that they would recognise and address the potential incongruity of constructing sustainable buildings surrounded by, and set within, unsustainable landscape. However, to date, there has been no research to test this supposition and assess the extent to which the ideas of sustainability have been taken up in landscapes associated with BREEAM certified housing built to be, and promoted as, sustainable. The new Code for Sustainable Homes and its companion assessment tool, the Regional Sustainability Checklist, are very recent introductions and were not in use when the assessment study described in Chapter 4 took place.

The research on which this book is based has provided the most comprehensive assessment of residential landscape sustainability within the UK to

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<sup>5</sup>As well as marketing benefits, the BRE states that BREEAM for homes is intended to raise environmental awareness amongst developers (BRE, 1991).

date. The findings of this research are summarised in Chapter 4. Suffice it to say at this point that a wide range of landscape performance was noted in the analysed case studies, and that development under the aegis of sustainable concepts and initiatives (Urban Villages, Millennium Communities and BREAM certification) does not by any means guarantee residential landscape sustainability.

As discussed earlier in the chapter, landscape sustainability is a key part of sustainable development. In relation to housing development in particular, the residential landscape often comprises a significant, if not dominant, proportion of a site's area and potentially introduces toxic materials and invasive plants unbound by walls and other structural impediments (Thompson & Sorvig, 2000). The landscape is also an opportunity to make the aspirations of creating a sustainable development visible to the residential community and visitors in ways that may improve their aesthetic and social environment. A building may be thermally efficient and constructed from materials that have low embodied energy and excellent life-cycle profiles, but appear no different from a thermally inefficient and unsustainably constructed building. This is not necessarily a bad thing as, for some consumers and developers, the idea of sustainable design always being associated with 'alternative' or 'different' may be a turn-off. In the landscape, however, sustainable design can come to the surface, be visible, enjoyable and informative. It encourages us to think about the positive contribution that, for example, vegetation can make towards achieving sustainability by reducing heat loss from buildings or increasing habitat diversity. Rainwater becomes a site asset and design opportunity to animate the landscape through swales and ponds rather than being perceived as a nuisance that must be quickly gathered and conveyed beneath the ground to a treatment works.

In short, sustainable design, especially in residential environments where building costs frequently diminish the landscape budget, may become a strong argument which encourages developers to look more favourably on the value of landscape. By making sustainable approaches to design more visible and in a manner which enriches our lives, there is also an opportunity to encourage residents to reflect on their own lifestyle choices. If we can see the value that vegetation has beyond making our environment appear more attractive, we may be inclined to take greater care and protect that which already exists.

If the sustainable contribution of the landscape is to be recognised and valued, then it is essential that it becomes an integral component of any sustainable development certification scheme. Whilst aspects of the landscape remain excluded from an assessment there is a danger that sustainable initiatives which inform the design, specification and management of the building may not be carried into the landscape. It may also be the case that developments which incorporate sustainable approaches which are not

included in the assessment criteria are not acknowledged and therefore not credited. The following chapter focuses on identifying the sustainability issues that need to be included within a residential landscape sustainability checklist. Although the literature review focuses on the residential context, many of the principles that are discussed in Chapter 2 could equally be applied to other development situations.

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