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Accessible Natural Green Space Standards in Towns and Cities: A Review and Toolkit for their Implementation

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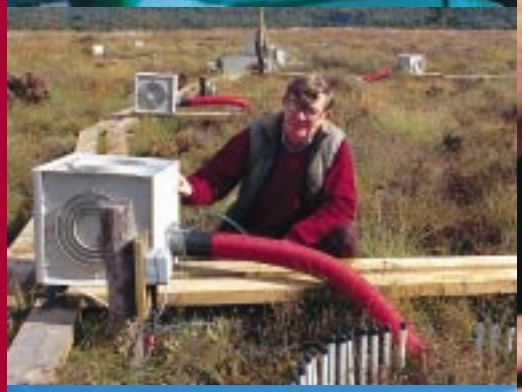

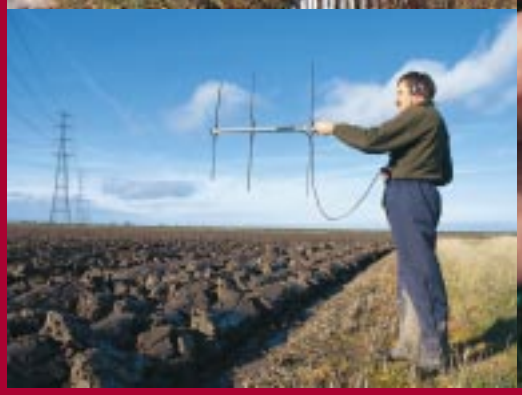

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Accessible Natural Green Space Standards in Towns and Cities: A Review and Toolkit for their Implementation

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Preface

This report was drafted prior to the publication of Planning Policy Guidance 17 *Open Space, Sport and Recreation* and its companion guide. Work is currently underway to test and refine the toolkit with the aim of publishing it later in 2003.

Executive summary

Background

The concept of standards for the provision of accessible natural greenspace in towns and cities arose from a body of work in the early 1990s that sought to recognise the importance of nature in the urban context. English Nature subsequently adopted the idea, publishing Research Report No. 153, *Accessible Natural Greenspace in Towns and Cities - a Review of Appropriate Size and Distance Criteria,* in 1995 and publicising the standard through the leaflet *A Space for Nature* in 1996.

The standard took on an added relevance as a new agenda for improving urban quality of life emerged following the publication of the report of the Urban Task Force, *Towards and Urban Renaissance,* in 1999 to which government responded with a range of initiatives both general, such as the Urban White Paper of 2000, and specific to the issue of open space, such as the setting-up of the Urban Green Spaces Task Force. There was an emerging recognition of the role of green spaces in improving urban areas and a growing appreciation that many years of underinvestment had seen a steep decline in the overall quality of this important resource.

In this context of a new interest in the value of greenspace, English Nature was concerned to find that its accessible natural greenspace standards seemed to be little used. Therefore, in 2001, a project was commenced to look again at the standards model in order to determine whether its validity could still be supported, how local authorities were managing greenspace policy and how the standards might be promoted effectively in the new and changing policy environment. This report presents the findings of that project.

The structure of the project

The project aimed to build on the earlier work published in Research Report No. 153 by producing an updated scientific review and looking in detail at the emerging policy structures that might influence the way in which government and local authorities can use and support the standard. Additionally, a range of interviews with specialist individuals and bodies was undertaken, together with a telephone survey of a sample of thirty local authorities which were selected randomly according to six different urban types according to the national census classification. In this way the broad framework within which the standard must operate was analysed, and conclusions drawn.

The report is structured to report each of these elements in turn, beginning with the scientific and policy review, then the results of the respective surveys, followed by case studies of innovative practice among local authorities and concluded by a summary of key findings and a range of recommendations.

Key findings

The review found that recent work broadly endorsed the scientific basis of Research Report No. 153, though many aspects of the role that greenspace plays in an urban context are thinly covered. However the value of greenspace in supporting biodiversity and human recreation was found to be well supported and the structure of the standard itself withstood this scrutiny.

Further evidence for the economic and environmental value of greenspace was revealed and a growing body of work indicating its potential contribution to human health and wellbeing was reviewed.

There is a rapid change taking place in many aspects of the public policy framework affecting greenspace planning and management. Local authority service delivery has been targeted by a number of initiatives to improve quality, value and community involvement. At central government level change is ongoing, a Green Paper on the planning system having recently been published, a review of planning policy guidance for sport recreation and open space approaching completion, and the publication in May 2002 of *Green Spaces Better Places,* the final report of the Urban Green Spaces Task Force.

The trend of change in the policy environment is generally working to push green space issues up the policy agenda , thereby creating a more conducive framework for the ANGSt model, though a move away from fixed national standards will require more flexibility to be introduced into the model.

The project found that awareness of the ANGSt model was very low among the local authority survey population. This lack of awareness meant that many local authorities had not worked with the standard at all. However, those that had, together with a number of specialists, reported that there were practical problems in applying it due to the definitions given and the lack of practical implementation guidance.

Great variations were found in the way in which local authority greenspace services are structured and in the quality, scope and currency of the available data. Although the use of open space standards by local authorities was found to be widespread, such standards exclusively focused on the provision of sport and recreation facilities to the exclusion of natural greenspace.

Recommendations

The project was able to identify a number of significant barriers to the implementation of the ANGSt model, and has made a recommendations to address many of them. Some of the key recommendations include:

- that **English Nature** should provide additional support to the model by: providing practical guidance (in the form of an implementation tool-kit); implementing an outreach strategy to raise the profile of the model; and by using its influence to advocate the referencing of the model in national and regional policy guidance and when consulted about the content of local development plans or on individual planning issues.
- that **local authorities** should: develop greenspace strategies as a means of ensuring balanced greenspace planning, including the use of the ANGSt model alongside other measures; conduct regular audits of open space; and should set locally-appropriate greenspace standards.
- that **central government** should work towards the development of a single framework for integrated greenspace planning.

The English Nature Accessible Natural Greenspace Standards model is perhaps of higher relevance now that at the time of its first publication. Current developments within central and local government increasingly require that means to measure service delivery and to support policy-making are available. As just such a tool for natural greenspace planning, the model has great potential utility to local authorities, but must receive ongoing support through information dissemination, implementation guidance and with some measure of official recognition at national level. Provided such things are forthcoming, usage of the model by local authorities might grow.

Contents

List of Tables

List of Figures

1. Introduction

1.1 The English Nature ANGSt model

English Nature is the statutory body that champions the conservation and enhancement of the wildlife and natural features of England. It does this in the urban environment as well as the open countryside. Among other priorities in the urban environment, English Nature has worked for a number of years to promote the provision of natural green space and, in 1996, it adopted its current Accessible Natural Greenspace Standards (ANGSt) model.

The ANGSt model has its origins in a paper by Box and Harrison (1993), published in *Town and Country Planning*. In this paper the case for standards was made based on a review of the functions and values of natural greenspace as a provider of experience of nature to local communities, and to improve the environment and protect its biodiversity. This work was further developed by Harrison *et al* (1995) in a research report, published by English Nature, entitled *Accessible Natural Greenspace in Towns and Cities: A Review of Appropriate Size and Distance Criteria* which subsequently became the basis for ANGSt. This report reviewed the available scientific literature and concluded that provision of natural greenspace in urban areas should be governed by a hierarchy of size and distance criteria.
b
English Nature subsequently adopted these standards and published the leaflet *A Space for Nature* to promote them. The ANGSt model requires:

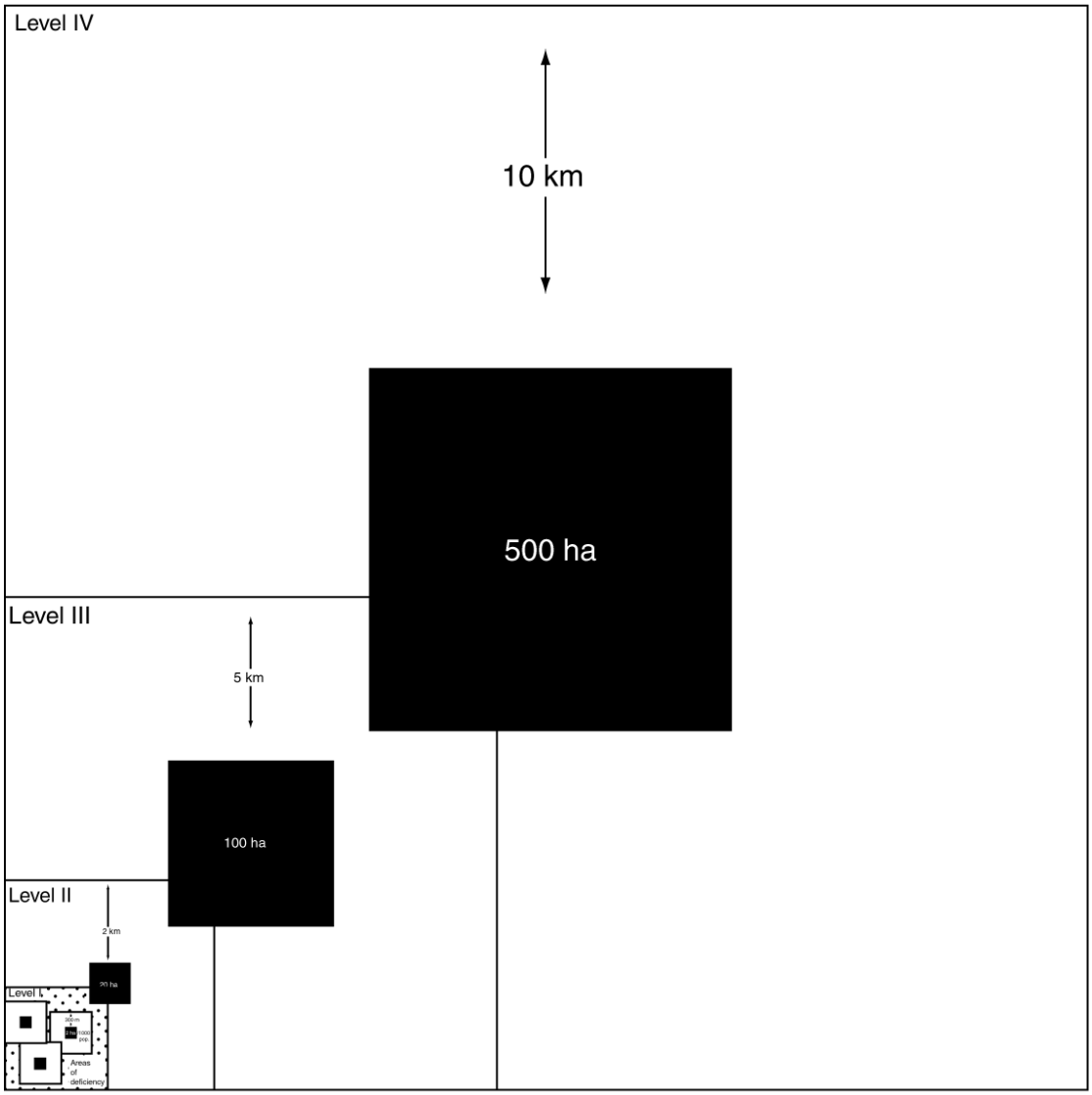
- that no person should live more than 300m from their nearest area of natural greenspace of at least 2ha in size;
- provision of at least 1ha of Local Nature Reserve per 1,000 population;
- that there should be at least one accessible 20ha site within 2km from home;
- that there should be one accessible 100ha site within 5km;
- that there should be one accessible 500ha site within 10km.

The standards were justified in the following ways:

- everyday contact with nature is important for well-being and quality of life;
- everyone should be able to enjoy this contact, in safety, without having to make any special effort or journey to do so;
- natural greenspace in towns and cities can play an important part in helping safeguard our national treasure of wildlife and geological features;
- accessible natural greenspaces give everyone an excellent chance to learn about nature and to help protect it in practical ways.
- adequate provision of vegetated areas helps to ensure that urban areas continue to function ecologically.

Subsequent English Nature publications have included *A Framework for the Future: Green Networks with Multiple Uses in and around Towns and Cities* (Barker, 1997), while English Nature has also utilised its statutory role in Local Nature Reserves to further the model.

ANGSt model*



* the hierarchic levels are not to scale

Figure 1.1 A spatial representation of the ANGSt model

1.2 Project rationale

Since 1996 there have been many changes in the context within which ANGSt was intended to operate. Since 1997 the government has highlighted the need to address the many problems facing England's towns and cities. In 1998 the Urban Task Force was established and its report *Towards the Urban Renaissance*, published in 1999, provided the basis for the Government's Urban White Paper, which was published in November 2000. Improving the quality of urban life is at the heart of both documents, thus making towns and cities more attractive places to live and work, helping to protect the countryside from further suburban development and promoting the ideals of sustainable development and other 'cross-cutting issues' such as better health, life-long learning and safer communities. Although explicit coverage of the value and roles of natural greenspace in urban areas was limited in the Task Force Report and Urban White Paper, the overall effect was such that the profile of open

space as a contributor to the new agenda rose in conjunction with consideration of many other issues.

In the same year, in response to an enquiry in 1998, the House of Commons Environment Sub-Committee (1999) produced a report on *Town and Country Parks*. Although this concentrated primarily on more formally managed recreational sites, the value of natural greenspace was noted.

The issue of greenspace was then given further prominence with the establishment of an Urban Green Spaces Task Force in January 2001 to review the current status of parks and play-spaces and to identify ways forward that will further enhance the resource. While the work of this task force continues, debate has been further stimulated by the ongoing Government review of Planning Policy Guidance 17, tentatively re-titled *Sport, Open Space and Recreation*.

English Nature's standards for accessible natural greenspace seem a particularly appropriate way forward in the context of the Urban Renaissance, and English Nature remains committed to furthering their use as a potentially significant contributor to human well-being as well as a support to urban biodiversity. However English Nature has found that those it has worked with to implement the model have experienced difficulties in its practical application, while anecdotal evidence has also indicated an apparent lack of a widespread move among local authorities to adopt the model. English Nature has therefore become concerned that the ANGSt model may not be achieving its desired impact.

1.3 Aims and objectives of the project

In consequence of this, English Nature has engaged the Centre for Urban and Regional Ecology to undertake this research study. The project has been designed to address two principal aims:

- to provide **a review and evaluation of the ANGSt model**, especially in respect of how local authorities and others perceive it and have been able to work with it;
- to develop **a specification for a tool-kit** that will help assist local authorities implement the ANGSt model in planning policy and on the ground.

This work is to be carried out in two distinct phases and this report presents the results from the first stage, comprising the review of the ANGSt model and its adoption by local authorities. This first phase had the following objectives:

- to review the current state-of-the-art related to the issues of green space standards;
- to establish a picture of current practice by interviewing a sample of local authorities and specialist organisations, in order to identify the potential for wider adoption of the ANGSt model as well as constraints and barriers to its implementation;
- to select a number of local authorities from which detailed case studies might be developed, demonstrating innovative and successful approaches to the use of the ANGSt model or similar concepts;
- to make recommendations for the development of a tool-kit for accessible natural greenspace planning.

In addressing these aims and objectives the project was expected to include within its scope of coverage the definitions associated with the standard, information needs and sources, variations in the urban landscape and the relationship of ANGSt to other open space standards.

The definitions are important because they form the basis on which practical decisions are made on the status of an area of green space in relation to the standard. In the case of ANGSt, clear and operational definitions of 'natural green space' and 'accessibility' are required to allow for the ready classification and mapping of sites, while the requirement for the implementation by different users in different situations calls for the definitions to be sufficiently robust so as to produce consistently comparable results.

The implementation of ANGSt is likely to depend significantly on the range and quality of information available to local authorities. It is therefore important to examine the information resources available in relation to what would be needed to implement the standard, so that gaps can be identified and recommendations made on potential means of overcoming them in a practical and cost-effective way.

The large variations in the urban landscapes of England's towns and cities present potential difficulties for the consistent application of the ANGSt model. More specific approaches may therefore be required which tailor ANGSt to the specific requirements of different categories of urban areas as well as to the neighbourhoods within. The survey of local authorities- and the case studies developed from it- will allow the practical distinctions between different urban landscapes to be identified and will assist in developing an appropriate underlying structure for the application of the ANGSt model.

While there may be a need for further development of the ANGSt standard, there is also a need to examine how the model relates to other approaches. An exploration of the scope for an integrated framework for green space standards and the means of their implementation is therefore necessary, allowing practical recommendations to be made on potential ways forward.

The project has been designed such that its second phase, the preparation of an implementation tool-kit for the ANGSt model, will commence soon after completion of this report and its acceptance by English Nature. While it is not possible in advance to set out in detail what will emerge from the second phase, it is perhaps appropriate here to outline its objectives.

Based on the findings from the review, the second phase of the project would involve the development of a protocol for a tool-kit to facilitate the implementation of the ANGSt model by local authorities. This tool-kit will be more than simply a technical device such as a geographic information system, though this might play an important role. The tool-kit will integrate several components, which together will form a planning-support system that will enable planning authorities:

- to define, map and monitor accessible natural green space;
- to assess the ecological/environmental, social and economic benefits of accessible natural green space;
- to identify areas of deficiency as compared with the ANGSt model;

- to develop specific targets for different urban landscape types;
- to build-up a geographical information system and to incorporate the ANGSt model into an internet application;
- to implement ANGSt in policies and on the ground.

It is envisaged that the tool-kit will be produced in a non-technical and well-illustrated style, addressing the needs of planners, regeneration professionals, green space managers, nature conservationists and non-specialists. It will provide an easy-to-follow manual guiding the whole procedure of implementing ANGSt. Best practice examples across a range of urban landscapes will be at the core of the tool-kit. The tool-kit will provide a framework methodology allowing local authorities to develop their own specific standards for different urban landscape types.

1.4 Summary of methods

The research for the first phase of the project has involved a number of specific elements. While the methodology is set out and discussed in detail in Appendix 1, an outline of the methods used is provided here and is shown graphically in Figure 1.2:

- An **academic and policy review** to examine current discussion of issues of green space standards and urban green space planning in the context of recent developments in government policy and thinking.
- **Interviews** with local authorities and experts. A random sample of 30 local authorities, stratified by urban type (according to the 1991 census classification) and geographical spread, was interviewed by telephone to review the use of ANGSt and to identify the barriers to its wider implementation. The two main target groups for interview were town planners involved in developing greenspace policy and those actively involved in providing services in respect of natural greenspace.
- A separate series of interviews was also undertaken with individual 'experts' within a range of institutions in order to gather views on the key issues under consideration. Those included within this sample were identified in a number of ways, including by the recommendation of English Nature or other bodies and by reference to published sources.
- A series of **case studies** was developed to gain a deeper insight into the potential and current limitations in the use of the ANGSt model.

The project team deployed brought a range of key interdisciplinary skills to bear such that the research was able to cover the key factors making up the context within which the ANGSt standards must operate. This included specialisms in the land-use planning system, parks and amenity management, landscape planning, urban ecology, environmental assessment and in the application of geographical information systems.

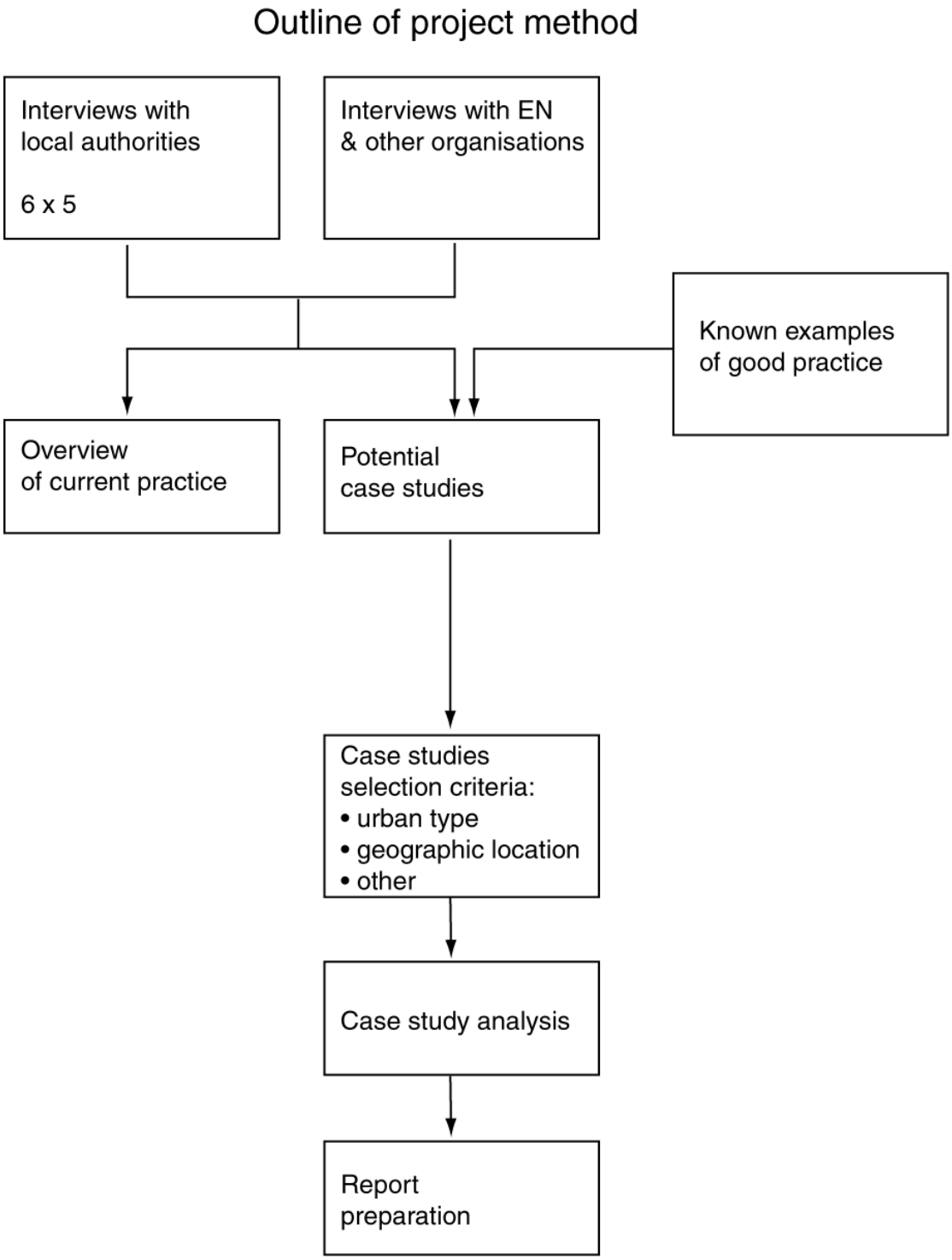


Figure 1.2 Outline of project methodology

1.5 Structure of the report

This report has been structured to reflect the design of the research and to present the issues clearly and logically. Following this introduction are four further chapters;

The policy context

This chapter examines how current government thinking and the advice and requirements placed upon local authorities impact upon the planning and management of greenspace, and draws out some conclusions concerning how these approaches might help or hinder the provision of accessible natural spaces.

Current state of knowledge

This chapter presents the results of a review of academic literature, setting the theoretical context for the study. A critical review of the ANGSt standard will also be presented, drawing on theoretical material and evidence from interviews.

Current state of practice

This section has drawn upon the evidence of local authority interviews to illustrate the current employment of ANGSt in the field and to identify the key implementation constraints facing local authorities in different urban landscapes.

Examples of best practice

Presenting case studies drawn from local authorities with experience of implementing aspects of the ANGSt, or similar, models for greenspace planning. The examples will be drawn from a range of different urban landscapes and will demonstrate good practice in the implementation of several different aspects of a standards-based approach.

The way forward

Will draw together the key themes identified in earlier chapters and will present a range of conclusions and recommendations to inform English Nature and a wider audience of potential ways to further the standard and to pave the way for the subsequent development of an implementation tool-kit in the second phase of the project.

2. the policy context

2.1 Introduction

English Nature Research Report no. 153 (Harrison *et al*., 1995) provides excellent scholarship to back the Accessible Natural Green Space Standards adopted. However, it is interesting to note that both that document and the promotional leaflet *A Space for Nature* (English Nature, 1996) say little about mechanisms for the promotion and implementation of the ANGSt model. The land-use planning system might be one obvious vehicle, but the goals that the model represents may be considered at least as likely to be reached by creative green space management as by land-use planning. In other words, the present, publicly-owned greenspace system of a town or city may offer opportunities to meet the Accessible Natural Green Space Standards through better stewardship of existing green spaces, than by their application to planning consents. Both possibilities are therefore worthy of consideration.

2.2 National policy

Government policy and priorities remain very influential in what happens locally. The Government has recently become actively engaged in the improvement of urban greenspace. This is mainly driven by the House of Commons Environment Sub-committee *Inquiry into Town and Country Parks* (1999) which drew attention to the decline in the care and quality of town and country parks. Subsequently, the *Urban White Paper* (DETR 2000) acknowledged the need to make towns and cities more attractive places to live in order to assist the Government in meeting its target for 60% of household growth to be contained within existing urban areas. This policy aims to protect the countryside from further suburban development and promote the ideals of sustainable development. Sustainable development is one of several 'cross-cutting issues', such as better health, life-long learning and safer communities, which Government and local authorities are committed to pursuing.

The Urban White Paper claims to be taking forward the agenda of *Towards an Urban Renaissance*, the Report of Lord Rogers' Urban Task Force (1999). The Task Force Report and the Urban White Paper are not explicit in their acknowledgement of the conservation of biodiversity and natural features and the value of urban wildlife habitats as a contributor to the goals that have been set by the Government to improve the urban environment.

As promised in the *Urban White Paper*, The Department of Transport, Local Government and the Regions has set up an 'Urban Green Spaces Task Force', under the chairmanship of the Parliamentary Under Secretary of State for Housing, Planning and Regeneration, Sally Keeble MP. An interim report has been published, *Green Spaces, Better Places* (Urban Green Spaces Task Force, 2000), and are due to produce policy recommendations for Government in April 2002. In the absence of any existing standard 'green spaces typology', the Task Force has proposed categories which include "natural green spaces – urban wildlife, ecology and woodland areas", also "green corridors, including river-banks, canals and waterfronts", and "greening of urban vacant and derelict land". However, there is no other mention of natural spaces in the Report and only two references to the value of urban green spaces for learning about wildlife.

2.3 Town and Country Parks Inquiry

Considerable attention continues to be paid to the Report of the House of Commons Environment Sub-committee Inquiry into Town and Country Parks (November 1999). In the select committee's final report, *Human Well-being, Natural Landscapes and Wildlife in Urban Areas: a Review* (House of Commons Environment Sub-committee, 1999), noted the policy of English Nature (as expressed in evidence) and concluded that: *"Human beings need to make contact with nature in the course of their daily lives, and no special effort (or journey) ought to be required for obtaining it"*. English Nature's Research Report no. 153, *Accessible natural greenspace in towns and cities: A review of appropriate size and distance criteria* (Harrison *et al*, 1995), found that to maintain good health by these means required that *"an accessible natural greenspace of two hectares should lie within 280 metres of everyone's home"* (para 38). The Report continues *"The memorandum of the Urban Forum of the UK Man and the Biosphere Committee offered figures of: One 2 ha site within 500m ... and one accessible 500 ha site within 10 km"* and noted that these standards were adopted by English Nature in 1996 with a modification that *"everyone should have access to a natural greenspace in less than 300m in a straight line from home"* (para 39).

In addition, the Select Committee's Report acknowledges English Nature's partnership with others in the Green Flag Awards (para 136). This scheme is also supported in the Urban White Paper and is attracting an increasing number of entries for an award whose judging criteria includes the conservation and appropriate management of natural features, wildlife and fauna. The 2001 Awards, presented on 8 November 2001, rewarded 81 public parks and other green spaces in England with Green Flag status.

2.4 The role of the planning system

It is crucial both to the aims of English Nature, and to the allied goals of Government and other agencies and initiatives concerning urban greenspace, that the provision, protection, conservation and enhancement of quality green spaces in the urban environment are promoted by the planning system. The Government sets out its national policies on different aspects of planning primarily through a series of Planning Policy Guidance Notes (PPGs). Local authorities are required to take account of the content of such PPGs when preparing their statutory development plans. PPGs are also material considerations when determining individual planning applications and appeals.

PPG17: Sport and Recreation, published in 1991, contains some references to open-space standards. These reflect the NPFA's standard for outdoor playing space recommendations and a model used in London (see 5.3 for more detail of this). However, the existing PPG17 is not prescriptive, merely presenting these as *"...illustrative material that may help authorities formulate local standards"* (DoE, 1991: para. 17).

The existing PPG17 is widely regarded as out-of-date and in need of revision. *The Urban White Paper* (DETR, 2000) confirmed the Government's intention to *"revise Planning Policy Guidance Note 17: Sports and Recreation to give local planning authorities a clearer framework for assessing their needs for open spaces, making good deficiencies and protecting what is valued, and ensuring that everyone has adequate access to open space. It will also aim to ensure that existing spaces are protected from development where appropriate and that new open spaces are well designed"*

However, the consultative draft of *a Revised Planning Policy Guidance Note for Sport, Open Space and Recreation (PPG17),* published in March 2001, does little to promote an holistic vision of the role of green spaces within the urban environment. The draft fails to mention English Nature's Standards for 'Natural Accessible Greenspace' or, indeed English Nature and any of its policies or publications. The House of Commons Urban Affairs Sub-committee has just concluded an inquiry into PPG17 and is expected to report early in 2002. English Nature appeared before the select committee on 16 October 2001.[1] During the Inquiry, Ministers confirmed that the final version of PPG:17 will not be published until April 2002 when the Urban Green Spaces Task Force is due to report. *Inter alia*, this will give the Task Force the opportunity to consider PPG17 via its Working Group Four, which is to look at planning and design aspects of urban greenspace.

In addition to national planning policy, the Government also publishes Regional Planning Guidance (RPG) for each of the English regions. The RPG process has recently been re-vamped and revised RPGs for each of the English regions have either been recently published, or are in the process of preparation. These RPGs are intended to set a framework for the preparation of development plans at the local authority level within each region. Although their content is generally fairly broad in nature, they do often contain some general references to greenspace issues. For instance, the *draft RPG for the North West Region* (NWRA, 2000) contains a policy (UR10) on urban greenspace and the public realm which states that development plan policies should *'...create and enhance urban greenspace networks by ensuring adequate protection is given to key features such as parks, linear walkways, river valleys, canals and public open spaces..*'. However, there is no specific mention of either the ANGSt standards, or any other greenspace standards. The content of the other RPGs is equally general – indeed some do not even go as far as the North West, merely containing a cross-references back to existing advice in PPG17, such as the draft RPG09 for the South East (DTLR, 2000), or giving very general references to the value of protecting playing fields and informal open space in urban areas, as is the case with RPG06 for East Anglia (DTLR, 2000).

At the local level, development plans generally also contain supportive statements and policies which, inter alia, promote natural greenspace in towns and cities. Following the suggestion in PPG17, many of these base their more detailed policies around the London model and have historically used the National Playing Fields Association standard. The survey of local authorities conducted for this project confirmed this to be the case and found very low usage of the ANGSt model or of any other system for managing the provision of natural greenspace (see Chapter 4 for further details). It is, however, inconceivable that a planning system can properly provide, protect and enhance natural accessible greenspace without employing standards of provision. Any such standards will concern themselves with accessibility and quantity but they should also incorporate those quality criteria that ensure that land which is provided and protected delivers attributable economic, social and environmental benefits to people and place. Such standards must be relevant to the local context, suggesting that any national standard should be seen as offering guidance rather than specific direction, and that guidance on their interpretation and application is as important as the standards themselves – the 'tool kit' approach proposed by English Nature should be helpful in this context and has already been mentioned, by English Nature, in evidence to the select committee mentioned above.

[1] A transcript of all the hearings is available on the www.Parliament.uk website.

It should be noted that the recently published Government Green Paper *Planning: delivering a fundamental change* (DLTR, 2001) has presented a range of proposals on reforming the current development plan system. It has not been considered appropriate in this report to speculate on the potential impact of these changes on greenspace issues, suffice it to note simply that this major element of the policy context is liable to change significantly as a result of them.

2.5 The management of green space within local authorities

Most of the existing public green space which makes up the urban green space system is owned and managed by local authorities which are also the local planning authorities. As with the operation of the statutory planning system, the activities of local government in England is substantially directed by central government. The current Government is generally pursuing a 'Modernising' Agenda for local government in England, which may offer significant opportunities for furthering the aims of English Nature. In addition, local authorities have been pressed to develop Local Agenda 21 strategies and take a lead in forming the partnerships for Biodiversity Action Plans – these may also have an important role to play in the promotion of green spaces at the local authority level.

The Government's modernising agenda can be summarised as (DETR, 1998).

- councils are empowered to lead their communities;
- councils' political decision-making processes are efficient, transparent and accountable;
- there is continuous improvement in the efficiency and quality of the services for which councils are responsible;
- councils actively involve and engage local people in local decisions; and
- councils have the powers they need to ensure that they can promote and improve the well-being of their areas and contribute to sustainable development.

Whilst all these aims could help the promotion of accessible natural greenspace, two statutory requirements which underpin this agenda are particularly important.

Firstly, the achievement of '*Best Value*' (Local Government Act 1999) requires local authorities to make arrangements to secure continuous improvement in the way in which they carry out their functions. They have to review all services in a five year rolling programme and publish annual Performance Plans. The Audit Commission's Best Value Inspectorate reports on these services, rating each local authority both for their performance and for the likelihood of their being able to improve.

The weakness of this system is that local authorities are left to describe the scope of the service for review. If their role in promoting Accessible Natural Green Space is not offered, it is not inspected. Whilst all services must be reviewed by the local authority over a five year rolling programme, services associated with nature conservation may form only a small part of the specified service. Providing and maintaining green spaces is not a statutory duty of local authorities and some local authorities may place the entire service as a mere subsection of a leisure service review, making it difficult to identify.

Secondly, the development of '*Community Strategies'* (Local Government Act 2000) is a statutory requirement made of local councils in pursuit of the power contained in the Local Government Act 2000 *"to promote and improve the economic, social and environmental well-being of an area"*. One function of the Community Strategy is to act as an overarching strategy; an umbrella for other strategies such as the Local Cultural Strategy. Paragraph six of draft guidance (DTLR, 2000) stated that:

> *"In particular, each local authority will want to consider how the power can promote the sustainable development of its area by delivering the actions and improvements identified in its community strategy... Authorities will also wish to consider how the new power can help them to contribute locally to shared national priorities, such as action to combat climate change and encourage the conservation of biodiversity, and to contribute to shared priorities within other plans such as Health Improvement Programmes".*

Other plans, again having no direct relationship with the statutory development plans or the planning system, could also be helpful in promoting Accessible Natural Green Space Standards: *Local Agenda 21*, the *Biodiversity Action Plan* and the *Local Cultural Strategy* are three non-statutory requirements but, nevertheless, local authorities are being encouraged to develop them.

2.6 Local Agenda 21

It was a Government target that all authorities should have in place Local Agenda 21 Strategies by the year 2000. Most local authorities have complied but some will have incorporated their strategies into other documents. The Government's perceived weakening of the UK's commitment to 'sustainable development' in the second UK Strategy *A better quality of life* (DETR, 1999) has encouraged some to produce more generalist reports. A briefing paper[2] to LA21 Environmental Co-ordinators, prepared by the Local Government Association, is similar in diluting the environmental content.

The possession of a LA 21 is a national Best Value performance indicator – Best Value Performance Indicator Advice to Auditors is as follows:

> *"Auditors/inspectors need to be made aware that some local authorities will have produced 'stand-alone' LA 21 strategies that clearly fit within the definition set out above. However, there are a number of other approaches which could equally meet the requirement for a LA 21 plan. These could be:*
>
> - *adopting a LA 21 statement setting out how other adopted plans and strategies meet the defined requirements of the Local Agenda 21 approach set out in "Sustainable Local Communities for the 21st Century" (a "plan of plans")*
>
> - *the integration of Local Agenda 21 with community planning in a community or well-being strategy, as part of a holistic approach to the well-being and quality of life of the area. Auditors/inspectors would need to satisfy themselves*

[2] available on the internet at http://www.la21-uk.org.uk

that the elements of the Local Agenda 21 process outlined above were satisfactorily covered".

There are very few useful statements to support urban wildlife in the current UK Strategy *A Better Quality of Life*, though it has a section on *Protecting and Enhancing Wildlife*.

2.7 Biodiversity Action Plans

The Biodiversity Action Plan process, arising from the UK Biodiversity Action Plan (1995), aims to deliver conservation objectives at the local level through a framework of local BAP partnerships, in which local authorities should be key players. The process has identified priority species and key habitats at a national and international level and, together with regional and local conservation objectives, these are delivered through local Biodiversity Action Plans (LBAP). most of the species and habitats identified in the UK BAP are not specifically urban and/or their presence in towns and cities is not of national significance.

However, there are species and habitats of national importance which are found in urban areas and, more importantly, the LBAP process allows the inclusion of local priorities. These may include, for example, cemeteries, railway linesides, parks and private gardens, all of which are crucially part of an urbanised green network, as well as generic actions that refer to planning issues, or accessibility to sites of interest. It is imperative that LBAPs show connections to existing LA21 strategies, Cultural, and Community Strategies, and the likely requirement for local authorities to produce green (or open) space strategies. In this respect ANGSt may have a useful role to play.

2.8 Local cultural strategies

Local Cultural Strategies are being promoted by the Department of Culture, Media and Sport as a means of meeting an objective of Government to require local authorities to plan for the cultural and recreational needs of their communities (a commitment subsequently underpinned by the Local Government Act 2000). In his introduction to the draft guidance, the Secretary of State says *"I look forward to all local authorities having a Local Cultural Strategy in place by 2002 to enable cultural activities to be centre stage in the lives of communities and at the heart of policy making"*(Department for Culture Media and Sport, 2000).

The scope of the Local Cultural Strategy should address the full range of recreational and cultural needs of a community, not simply the role of the local authority in direct provision. The community should be regarded as the whole population within a local authority's administrative area. This is a community which will be a collection of many smaller communities, perhaps many with a stronger sense of identity. These communities will not just be those defined by distinct districts within the geographical boundary. The concerns and wishes of special interest communities, such as local natural historians or walkers, should also be addressed by LCSs.

The Local Cultural Strategy should show how it relates to strategies in other areas of policy where culture is a significant factor. This includes strategies for parks, green spaces and countryside. Local Cultural Strategies should reflect and complement the policies contained in Local Development Plans. Local Cultural Strategies should inform revisions of the local

development plans and county structure plans. They may be regarded as non-statutory documents offering material support to development policies.

Guidance from the Department of Culture, Media and Sport does not explore the relationship between culture and nature conservation but, inter alia, it does state that one of its principles is to *"take account of the wider national and regional context…this includes the objectives of…English Nature"*. It also says *"The DETR has policy responsibility for some important elements of cultural strategies, notably parks, open spaces and countryside recreation, waterways, landscape and wildlife conservation… the Aim and Objectives of DETR for this area include… 'to enhance opportunity in rural areas, improve enjoyment of the countryside and conserve and manage wildlife resources"* (DCMS, 2000).

2.9 Summary

The review of the policy context for the Accessible Natural Greenspace Standards model raises a number of policy issues which lead to questions relevant for this research project:

Table 2.1 Policy issues and the implementation of the ANGSt model

Policy Issue	Research question
The extent to which Accessible Natural Green Space Standards are promoted alongside other advice to local planning authorities	Local planning authorities may simply be more familiar with other standards because they are promoted more effectively
The extent to which planning authorities are able to reconcile Accessible Natural Green Space Standards with other standards such as the National Playing Fields Association 'Six Acre Standard'	There are ambiguities in RR 153 which may be a stumbling block to the use of both NPFA and EN standards. If these two standards are to be added together, how much more greenspace would a local authority need to provide and how realistic is it?
The extent to which the Accessible Natural Green Space Standards can promote the aims of English Nature for urban areas	Are the standards the best way of enriching the wildlife habitat of a typical urban environment?
The extent to which Accessible Natural Green Space Standards are best promoted by planning authorities, as compared to their promotion by land managers	The majority of the overall form of a typical town or city remains substantially the same, even over the span of a generation. Should the standards be primarily promoted through new development to secure new areas of greenspace or can they be used to improve the accessibility and quality of 'natural greenspace' within the existing landholding of the same local authority?
Are NPFA standards for playing space (i.e. 'six acre standard' and NEAP & LEAP) more useful for planning purposes than Accessible Natural Green Space Standards?	Is it easier to defend greenspace from alternative development if it is playing fields rather than 'natural greenspace'? Is it easier to get developers to put in playgrounds under Section 106 agreements than create 'natural greenspace' within their developments?

Summary of policy review:

This review of current policy has concentrated on the local and national government context in which the ANGSt Model operates. The key points arising from this review can be summarised as follows:

1. Whilst much of the land involved belongs to local authorities, their freedom of action in policy making and management is substantially determined by the demands made on local authorities by the Government, both directly (i.e. through central control of the planning framework) and indirectly (i.e. through influence on local government finances affecting the local setting of priorities and resource constraints).

2. Current national and regional planning policy, as set out in *PPG17*, *PPG9* and the latest round of RPG documents, does not yet provide an adequate basis for the promotion of accessible natural greenspace. Although improved, the references within the *Urban White Paper* and draft revised *PPG17* still do not do so. None of these documents currently make reference to English Nature's Accessible Natural Green Space Standards.

3. Notwithstanding the scant references to nature conservation and ecology in both the *Urban White Paper* and the draft *PPG17*, the Government is demonstrating a commitment to a new urban agenda in which urban green spaces are a major consideration, and to re-invigorating local government. This is producing a plethora of strategic processes being required of local government which are largely external to the statutory planning system. Each presents an opportunity to influence local policies in favour of planning for a richer urban ecology as a complement to more attractive towns and cities, but requires commitment from external organisations to do this.

4. Plugging into this agenda means more than relying on standards of provision, and more than influencing town-planning decisions. Opportunities to correct deficiencies in accessible natural greenspace under the planning system may be limited. In many established towns and cities, such deficiencies are more likely to be corrected by greater attention to the quality of existing green spaces and the accessibility to them. Good management strategies, attracting local support, could achieve many of English Nature's goals for urban greenspace more effectively.

5. As far as planning is concerned, it is too early to predict the full eventual impact of the new *Green Paper* on the Planning System under which the Accessible Natural Green Space Standards seek to guide provision. However, it is possible, from a reading of the transcript of Lord Falconer's evidence to the Urban Affairs Sub-Committee on 14 November 2001, to be confident that the requirement for local authorities to assess their needs for open space, in terms of both quantity and quality, will be strengthened, and that some kind of supporting document will be produced which adds guidance to such issues as design. If so, it is important that Accessible Natural Green Space Standards are included in any official guidance and that practical advice is given regarding their implementation. It is also important that English Nature makes a response to the Interim Report of the Urban Green Spaces Task Force to gain better recognition for accessible natural greenspace in urban areas.

3. The scientific context of the ANGSt model

3.1 Introduction

The original publications in which the ANGSt model was proposed already provided a literature review, concentrating on the environmental, ecological and social functions of natural green space, and in particular size and distance criteria as well as accessibility issues (Box and Harrison, 1993; Harrison *et al.*, 1995). As RR153 (Harrison *et al.* 1995) had been published in 1995, thus referring to the literature available at this time, it can be assumed that new research studies will have been undertaken, and these may provide further support or suggest revision of the ANGSt model.

However, a comprehensive review of the scientific evidence would have gone beyond the scope of this project mainly concerned with reviewing the practicality of ANGSt and developing a toolkit guidance for its implementation. The basic assumptions on which the model built were not fundamentally put into question as they seemed to be well argued in RR153.

The main purpose of this chapter is to give insight into the scientific context of the ANGSt model. The following sections should be considered as a complement to the original review provided by RR153, discussing the results from some more recent literature. The chapter will also direct attention to some issues not yet fully recognised in RR153. It has to be recognised that the approach followed here is selective and therefore cannot provide a fully balanced picture of the issues at stake. Yet, whilst acknowledging these limitations, it was felt that the report would benefit from a brief discussion of the scientific context to draw conclusions how to take forward the ANGSt model.

For a more complete discussion of the scientific evidence, reference can be given to a number of literature reviews and reference books, in particular:

- A general review of research on urban greenspace undertaken in a study for the Department for Transport, Local Government and the Regions (Dunnett *et al.*, 2001).
- A bibliography provided in the report *Improving Green Urban Spaces* (University of Newcastle, 2001).
- The relation between greenspace, human health and well-being in Henwood *et al.* (2001), NUFU (1999), Rohde and Kendle (1994).
- Urban Ecology (Gilbert, 1989); habitat corridor planning (Cook, 1991 & 2000, Arts *et al.*, 1995), a critical review of the functionality of corridors for nature conservation (Dawson, 1994), habitat fragmentation and corridors (Kirby, 1995).
- Concepts for multifunctional *green networks* (Barker, 1997) or *greenways* (Smith and Hellmund, 1993; Fabos and Ahern, 1996, Ahern, 1996), *urban forestry* (e.g. Forrest *et al.* 1999), and *greenstructure planning* (see COST Action C11 *Greenstructure and Urban Planning*, Bergen-Jensen *et al.*, 2000).

3.2 Benefits of natural greenspace

3.2.1 Recreation and nature experience

In Europe, the great majority of the human population is living in urban settlements (e.g. EEA, 1999 Chapter 3.12). Therefore cities and towns are the first place where most people experience nature on a day-to-day basis.

People visit parks for a variety of reasons such as exercise, being in the fresh air, walking the dog, or meeting people. The literature review undertaken by Dunnett *et al.* (2001) shows that the ranking of these activities can vary between cities. Walking was most popular in a survey in Sheffield (Sheffield City Council, 2000) whereas cycling, jogging and dog walking were the most popular activities in London parks (Richards and Curson, 1992; Curson *et al.*, 1995; CLTS 1993, 1996). The experience of a natural landscape is an important, however, rarely the main motivation to visit a park (Grahn 2001, Nohl 1984). It is rather a feature to be enjoyed amongst other attractions of a greenspace. Other qualities particularly valued are safety, spaciousness, a place to meet, facilities such as cafes, and cultural heritage. It is the combination of these features which makes parks particularly attractive. Therefore larger parks, with a variety of facilities and features, are more popular, better known and more frequently visited than small parks (Grahn 2001).

A conclusion for the ANGSt model would be that it is desirable to provide natural areas within designated greenspace already accessible and under management for other recreational uses. This seems to be also important as unmanaged open spaces can give an impression of being potentially unsafe, and perceived lack of safety was seen as a major reason not to visit open spaces, in particular by women (Millward and Mostyn, 1988; Coles and Bussey, 2000; MORI, 2000; Grahn, 2001). A formal setting at key points such as entrances and high standards of maintenance, including the rigorous removal of litter, are therefore critical to enhancing the utilisation of greenspace by the community.

Interestingly, Grahn (oral. comm.) observed that the use of parks was positively correlated with the access to a private garden at home. Private green space cannot be considered as a substitute to public green space but is an important complement.

Physical design parameters for urban woodlands were investigated by Cole and Bussey (2000) in Redditch. A size of 2 hectares was identified as the smallest wood that people wish to visit regularly. Small woods could be attractive when linked together by footpaths. Shape became particularly important in small woods of less than 5ha in size. Blocks of woodlands which allow circular walks were preferred to narrow belts.

Open structure woods were preferred by both sexes to woods with a dense canopy cover, in particular because of security concerns but also because open woodlands offer a more varied environment (Coles and Bussey 2000). Interviews revealed that escape from urban life and activities was the most important motive to visit a wood, in order to seek a sense of tranquility. Whether the woodland was a plantation or an ancient woodland did not appear to matter. Woodland visitors described 'natural' mostly as a contrast to the urban setting, and every sign of urban intrusion reduce the pleasure to experience nature. Rubbish, signs of vandalism, and management that did not accord with the personal remit were seen as particularly negative impacts. These findings are supported by further studies reviewed in Dunnett *et al.* (2001). The perception of what is natural largely differed from the views of

experts, which described woodlands by using scientific terminology, referring to species as descriptors (Tab. 3.1).

Table 3.1 The valuation of woodlands - a comparison of the criteria adopted by local users in relation to those used by woodland rangers

(from Cole and Bussey, 2000, p. 186).

Local users	***Woodland rangers***
Personal language used to describe woodlands	*Strict professional language to describe woodlands according to their training*
Urban woodlands classified according to a definition of natural derived from experience	*Urban woods classified according to conventional nature conservation/forestry terminology*
All woodlands that conform to this experience are highly valued, irrespective of formal classification	*Only woodlands that conform to this are highly valued, others receive no recognition and are severely undervalued*
Accept/ require management that reinforces a personal ideal irrespective of woodland's origin,	*Accept/ require management to meet nature conservation requirements*
Non-species specific	*Highly species specific*
Do not wish to see wider public use encouraged	*Encourage wider public access*
All use set in a social context	*Use set in nature conservation context*
Important requirement is that the experience is a refuge from the stress of urban life	*Important requirement is that natural areas are present in the urban situation*
Key issues of access and safety	*Key issues derived from nature conservation*
Regard the woodlands as their own	*Regard the woodlands as their own*
Tend to blame the local authority for problems	*Tend to blame the local authority for problems*

The vast majority of park users reach the park on foot (Llewelyn-Davis, 1992; Comedia and Demos, 1995; Curson *et al.*, 1995, all cited in Dunnett *et al.*, 2001). According to Llewelyn-Davies (1992), 80% of open space visitors travelled on foot, and the frequent park users were local residents in the large majority. Distance is therefore a major factor for open space use. Studies in Swedish towns also showed that the frequency of park visits is closely correlated with distance from home (Grahn, oral comm.). The importance of proximity is increasing in today's society due to less time being available. A walking distance of approximately 6 minutes from home was identified as a threshold above which daily park visits significantly decreased. Another Swedish study found that distance was a key factor for the recreational use of woodland areas (Hörnstein and Bredman, 2000). Over 40% of a randomly chosen sample of 1000 interviewees wished to live closer to woodland areas. An extensive study on the use of woodland for recreation in Redditch, UK, shows the strong correlation between distance and frequency of site visits (Fig. 3.1). A walking distance of no more than 5 minutes footwalk, coresponding to distances of 100-400 m, were considered as ideal home range location (Cole and Bussey, 2000).

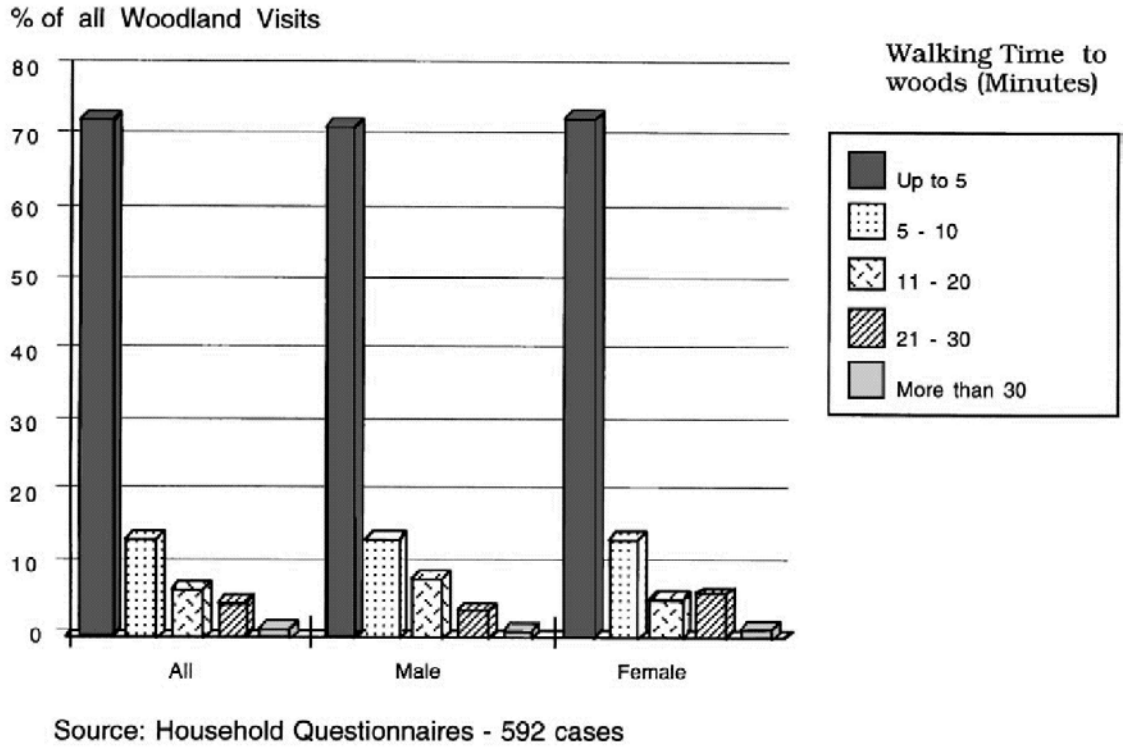


Figure 3.1 The effect of urban woodland location on usage patterns

(Cole and Bussey, 2000, p. 182)

While referring to a larger maximum walking distance of 15 minutes, distance has also been established as an indicator of urban environmental quality on a European level. The first European assessment of the environment stated that:

> *'In Brussels, Copenhagen, Glasgow, Gothenburg, Madrid, Milan and Paris, all the citizens live within 15 minutes walk from public green space. This is also the case in most smaller cities, such as Evora, Ermoupolis, Ferrara, Reggio Emilia and Valletta. In Prague and Zurich the corresponding figure is 90 per cent, in Sofia 85 per cent, in Bratislava 63 per cent, in Venice 50 per cent and in Kiev 47 per cent. In the majority of European cities, more than half of the population meet this criterion.' (Stanners and Bourdeau, 1995).*

Overall, there is clear evidence that distance from home is an important factor for greenspace use. A distance of appr. 5-6 minutes foot walk from home seems to be a threshold beyond which the frequency of greenspace use sharply declines. In the original ANGSt model, in approximation a 300 m straight line distance was suggested for the natural greenspace provision on the lowest level of the hierarchy. This distance reflects the fact that actual walking distances will be slightly longer as they follow the existing pattern of access streets. This difference between straight line and real distances should be taken into account, if the measurement of catchment areas for natural green space is based on actual walking distances.

3.2.2 Health benefits from urban greenspace

The relation between human health and green space provision and quality is still poorly researched in the European context. Most of the studies listed in the publication *'Trees & healthy living'* (NUFU, 1999) have been undertaken in the US (such as Ulrich, 1984, 1991,

2002). In a recent review, Henwood (2001) explores 'the linkages between the Environment and Health'. In Western societies, emphasis has been placed on medical approaches to illness and health. However, the decline of epidemic respiratory and infectious diseases since the early days of the Industrial revolution needs rather to be attributed to environmental improvements (McKeown 1979, cited in Henwood, 2001). Reduced stress tolerance, involving suppression of the immune response, and changes in the integrity of societal organisation, are proposed as two main pathways by which poor environmental conditions negatively impact on health.

P. Grahn (oral comm.) was able to demonstrate that frequent parks users experience less health problems and stress symptoms. Dunnett *et al.* (2001) quote a recent study in the Netherlands (DeVries *et al.*, 2000) concluding that people living in greener environment report fewer health complaints, have better perceived general health and a better mental health. However, no reference is given in the review whether there is evidence of a direct causal relationship between the level of greenspace provision and health. In an often cited study, hospital patients were reported to recover more quickly with a view on a tree as compared with a view on a wall (Ulrich, 1984). In the recent conference *Greenspace & healthy living* (NUFU 2002), Ulrich presented an overview of a number of further studies providing strong evidence of the important role greenspaces can play to improve physical health and reduce experience of stress (Ulrich *et al.* 1991). There is no difference between managed greenspace such as parks and wilderness areas. Henwood (2001, p. 33) reports on studies which show the beneficial effects of wilderness experience when there is a possibility to enter the landscape rather than viewing it. The health benefits of outdoor environments can be further increased through the organisation of activities ('green gyms') to promote walking, conservation work, and educational initiatives (Henwood, 2001). Woodland and other outdoor space are considered as appropriate settings for these activities.

A number of studies reviewed by Jorgensen (2001) show that already small amounts of physical exercise have a benefit on health and well-being. However, no particular reference is given to natural greenspace. To promote physical exercise, *The Countryside Agency* in partnership with the *British Heart Foundation* recently launched a '*Walking the Way to Health*' initiative, a five-year programme to encourage people in poor neighbourhoods to walk more (Ashcroft 2002). Green Gyms are another initiative by the *British Heart Foundation* based on evidence that access to the countryside and greenspaces are a major motivation for walking (Bird 2002).

There is also considerable evidence that experience of nature can bolster mental health. For instance, results from social surveys suggest (Henwood, 2001, p.32) 'that flowers and plants provide a reason for visiting and enjoying recreational sites, that local greenery and landscapes are important contributors to satisfaction with place of residence, and that plants are calming and relaxing' (Butterfield and Relf, 1992; Browne 1992; Randall, Shoemaker, Relf and Geller, 1992, all cited in Henwood, 2001). An extensive literature review of the psychological benefits of green space is provided by Rohde and Kendle (1994).

Overall there is still a huge deficit in research in this field. For instance, there is almost no information available on the relationship between the overall level of greenspace provision in urban areas, the configuration of greenspace and their quality, on the one hand, and health parameters, on the other. Indirect evidence is provided by Grahn who observed that greenspaces are better known and frequented in towns where the overall greenspace provision

is high (Grahn, oral comm.) . Yet, for greenspace planning there is still a great need for further information to support the setting of greenspace targets on this basis.

3.2.3 Economic benefits from greenspace

The positive impact of greenspace on land and property prices has been shown in several recent studies. The analysis of data from over 1000 apartment sales in Joensuu, Finland, showed a positive correlation between prices and the amount of forested areas in the neighbourhood (Tyrväinen, 1997). According to Tyrväinen and Miettinen (2000) a one kilometre increase in the distance to the nearest urban forest area lead to an average 6 per cent decrease in the market price of the dwelling. In the Netherlands, prices for houses with a garden connected to a sizeable lake were up to 28% higher, whereas overlooking a lake or a parks increased the price by approx. 10% (Luttik, 2000). Similarly, a study in Zürich showed that hotel rooms had a higher price with a view on a green space, reflecting the market price of the hotel (Lange and Shaeffer, 2001). Open space size was positively and distance from open space negatively correlated with home sales prices in an American study (Bolitzer and Netusil, 2000).

3.2.4 Biodiversity

Vegetation, flora and fauna were studied in many urban areas and excellent accounts are provided in books such as '*Urban Ecology*' (Gilbert 1989). The review from Harrison *et al.* (1995) showed that there is a positive correlation between settlement size and their species diversity (e.g. Pysek 1993, Klotz 1990). A comparison of floristic data for different landscape types in Bavaria indicated that city regions can be quite species rich due the existing mix of remnants from natural landscapes (i.e. ancient woodlands), historical cultural landscapes (i.e. grassy heathlands), as well as typical habitats of urban and postindustrial landscapes such as wastelands on post-industrial land (Duhme and Pauleit, 2000). The urban area included in this study had a greater number of endangered higher plant species than the intensive farming area. Within urban areas, urban fringe landscapes particularly contribute to species richness, due to the diversity of different land uses (Kunick 1974), including a variety of greenspace types. However, urban areas in general, and the urban fringe in particular, are highly dynamic and natural structures such as remnants of ancient woodlands and landscapes associated with historical cultural practices are especially at risk of destruction and fragmentation of habitats as well as deterioration of their habitat quality (Antrop, 2000; Pirnat, 2000; Miyashita, 1998).

Inner urban areas being densely built up and low in greenspace provision, are relatively species poor. A large part of the spontaneous flora and fauna consists of introduced species, often only thriving under the specific conditions which these sites offer such as elevated air temperatures and disturbed soils, on sites where management is largely absent. Public greenspaces are generally intensively used and managed, and therefore often have a low value for wildlife (Reeves, 2000).

The overall greenspace provision, size, diversity of greenspace types, their history and the intensity of management and use are decisive factors for their species richness. Relics of ancient woodlands, and of cultural landscapes such as heathlands, and hedgerows are of particular importance for nature conservation in cities and elsewhere (see Gilbert 1989). Intensively managed vegetation usually has a low conservation value when assessed by criteria such as species richness and incidence of endangered species, although in certain

circumstances they can play an important role, such as foraging ground for winter migrant birds (e.g. redwing). Vegetation structures such as old stands of trees are important for some species groups such as birds, insects and bats in otherwise intensively managed and used parks and residential greenspace. Older studies (Owen 1983). Overall, it is the variety of greenspace types with their specific frame conditions contributing to urban biodiversity (Niemela, 1999).

Harrison *et al.* (1995) provided a review of the literature regarding general ecological characteristics of urban areas, particularly highlighting:

- the positive correlation between settlement size and their species diversity (e.g. Pysek 1993, Klotz 1990), specifics of urban flora and fauna (e.g. Gilbert 1989) and the negative correlation between building density/ intensity of urban land use and species numbers on a gradient from the urban fringe to the inner city (Davis 1978, Cousins 1982, Sukopp and Werner 1983);
- size-class range of urban habitats, showing the high percentage of small habitat parcels in urban areas (e.g. GLC 1984);
- positive species/area relationships of urban habitats, for instance for wastelands (Crowe 1979), birds (Luniak 1983, Renman and Mörtberg 1994), amphibians and reptiles (Dickmann 1987); and of selected site sizes comparing species numbers for sites of 1, 10, and 100 ha in size. In general, the relationship between habitat area and species numbers is well established, however, the causal mechanisms underlying this effect are in many cases still unclear;
- factors other than site size such as site history, present and past management (e.g. Gilbert 1989);
- habitat isolation and the role of corridors, referring to the review of Dawson (1994) who cautioned against adopting uncritically the assumption that wildlife corridors serve as conduits along which species migrate. Corridors may be unnecessary for the more mobile species/ species with better dispersal capability yet may enhance connectivity for species with limited potential to cross barriers. The overall amount and density of suitable habitat can be more important than the direct linkage of these (Dawson 1994, Kirby 1995).

Yet, efforts should be made to preserve coherence between habitats through linkage by corridors of the same habitat type and by maintaining a high density of these habitats. It is important, though, to clearly define the aims of green corridors and their functions. Ultimately, whether green space and corridors meet their goals depends on adequate planning and management (Briffet 2001).

Moreover, it seems to be important to take into account the hierarchic organisation of landscapes to which species respond. The implications for nature conservation in urban areas are discussed by Hostetler (1999) who establishes the link between levels of planning and decision making and the levels of scale on which species operate. Big birds of prey such as hawks require suitable habitat on a large extent (ibid.). They mainly respond to structural components of the landscape on a relatively coarse scale, e.g. the density, size and configuration of woodland patches. Smaller birds such as the wren, on the other hand, operate on a lower level and they utilise structures on a more fine grained scale, for instance groups of old trees with unmown herb layer. Thus, scale for a species is defined by the extent and the

grain (minimum resolution). However, '*the hawk may not only depend on broad-scale structure but also on fine-scale structure that exists in a backyard (e.g., perch or nesting sites'* (ibid. p. 17). Cumulative effects, for instance to remove suitable nesting sites, may lead to the area becoming finally unsuitable as a habitat for the species.

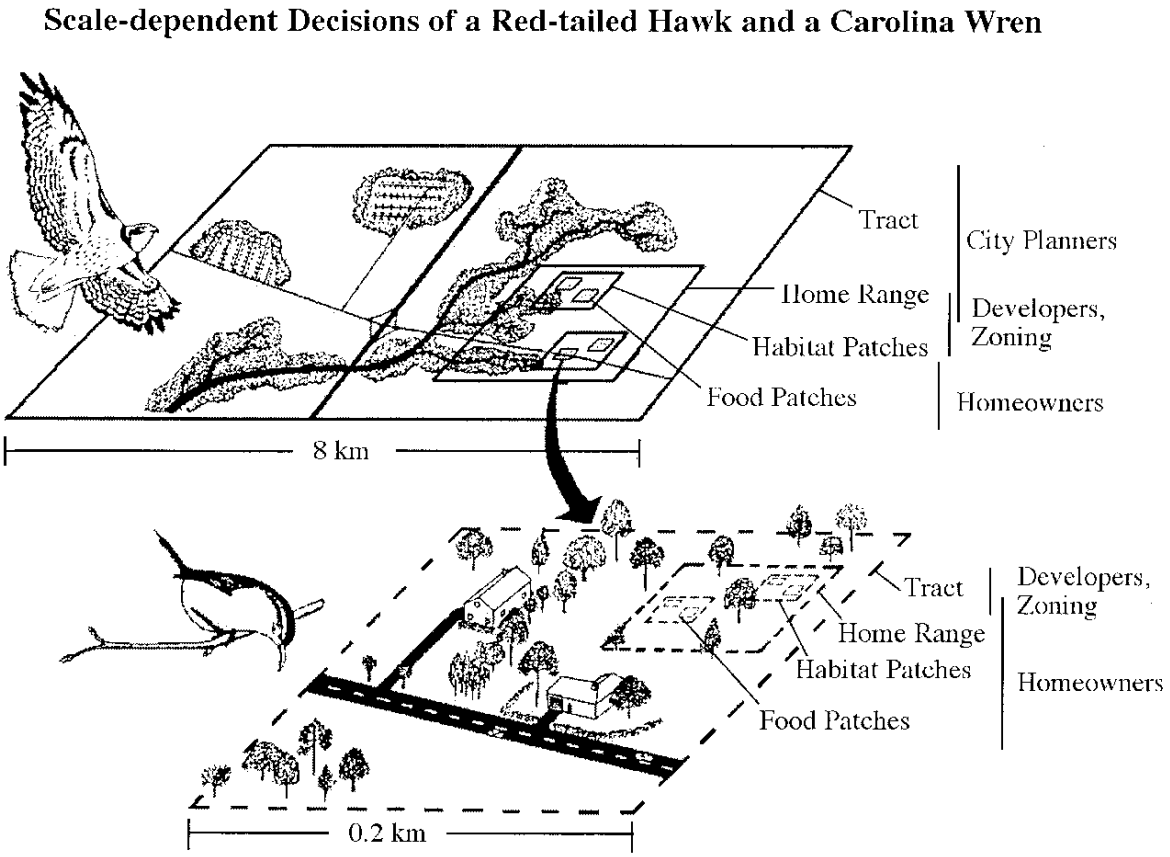


Figure 3.2 The theoretical hierarchical decisions made by a Carolina Wren and a Red-tailed Hawk

Each bird has a similar set of hierarchical decisions, but the hawk selects much larger areas and objects at each comparable scale (from: Hostetler, 1999)

Planning on the strategic level of the whole city will be of particular importance for species such as the hawk, whereas small-scale levels are more important for others. This concept will need to be reflected in hierarchical approaches to greenspace planning, and the design of designated area systems (Flores *et al*, 1998).

3.2.5 Environmental services

The review by Harrison *et al.* (1995) demonstrated the importance of urban greenspace in reducing the urban heat island effect in inner cities (see also Eliasson, 2000). For instance, the daytime air temperatures in a large urban park were found to be over 2°C lower than in the surrounding built up areas (von Stülpnagel, 1987, von Stülpnagel *et al.*, 1990). Parks need to have a size of at least one hectare to have a significant climatic effect. The same study also showed that urban parks reduced air temperatures in the adjacent neighbourhoods. This effect, however, was limited to a relatively small zone, which extends only 200-400 m from the margin of a large park on a calm day. These findings are in support of the establishment of a dense network of public greenspaces and stress the importance to maintain existing greenspaces in built-up areas. This clear local climatic benefit is a separate justification for

the similar distance criteria proposed by the ANGSt model on the lowest level, primarily arising from considerations of public accessibility.

However, the results also show that public green space cannot compensate for lack of vegetation within urban land uses (e.g. Pauleit and Duhme, 2000). Planning for urban climates needs to consider the whole urban green space resource, including vegetation in residential areas, on institutional grounds etc. The distinction between natural and other forms of vegetation is not relevant to climate planning, whereas important differences exist between land cover types and vegetation structures such as groups of trees, shrubberies, rough grasslands, amenity grasslands, arable land and flower beds. The same holds true for other environmental services such as removal of air pollutants, rainwater infiltration, surface run-off. Whitford *et al.* (2001) showed in a study in Merseyside how the different vegetation cover in residential areas controls environmental parameters such as surface run-off (Fig. 3.3). Other studies have assessed the potential of urban woodlands to remove air pollutants (Freer-Smith and Broadmeadow, 1996, Beckett *et al.*, 1998). A woodland in Nottingham was estimated to reduce concentrations of sulphur dioxide and nitrogen oxides in the air by 4-5% (Freer-Smith and Broadmeadow 1996). More important, however, can be the function of trees to capture dust. A large scale study is currently undertaken in the West Midland region of England to estimate the overall removal rates of air pollutants by the urban forest (NERC, 2001; see also McPherson *et al.*, 1994).

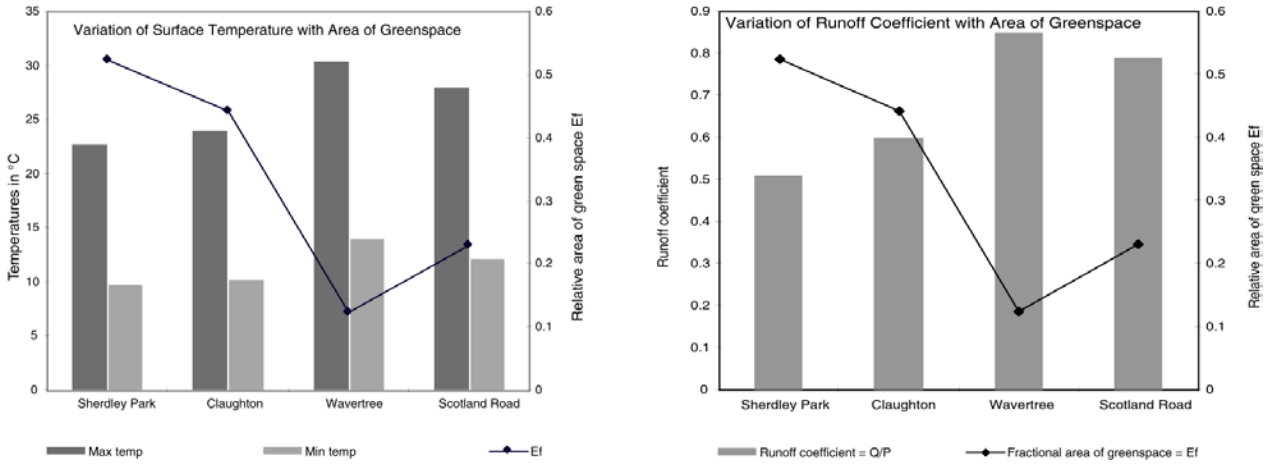


Figure 3.3 Environmental performance of residential areas in Merseyside with a different level of greenspace provision

(adapted from Whitford *et al.* 2001)

While there can be little doubt that the urban forest has a largely beneficial effect on air quality, the emission of volatile organic compounds (VOC; Beckett *et al.* 1998; Owen *et al.*, 2000, quoted in Henwood, 2001) as precursors of ozone has recently gained attention. This may be an issue in hot climates with intensive solar radiation because of the chemical processes involved.

The potential role of the urban forest to reduce energy demand from space heating and air conditioning has been studied mostly in a US context (e.g. McPherson *et al.*, 1997). A geographic information system was used to explore the spatial aspect of urban land cover and to identify areas in deficit of vegetation cover based on an assessment of its environmental services in the City of Munich (Pauleit and Duhme, 2000, Fig. 3.4).

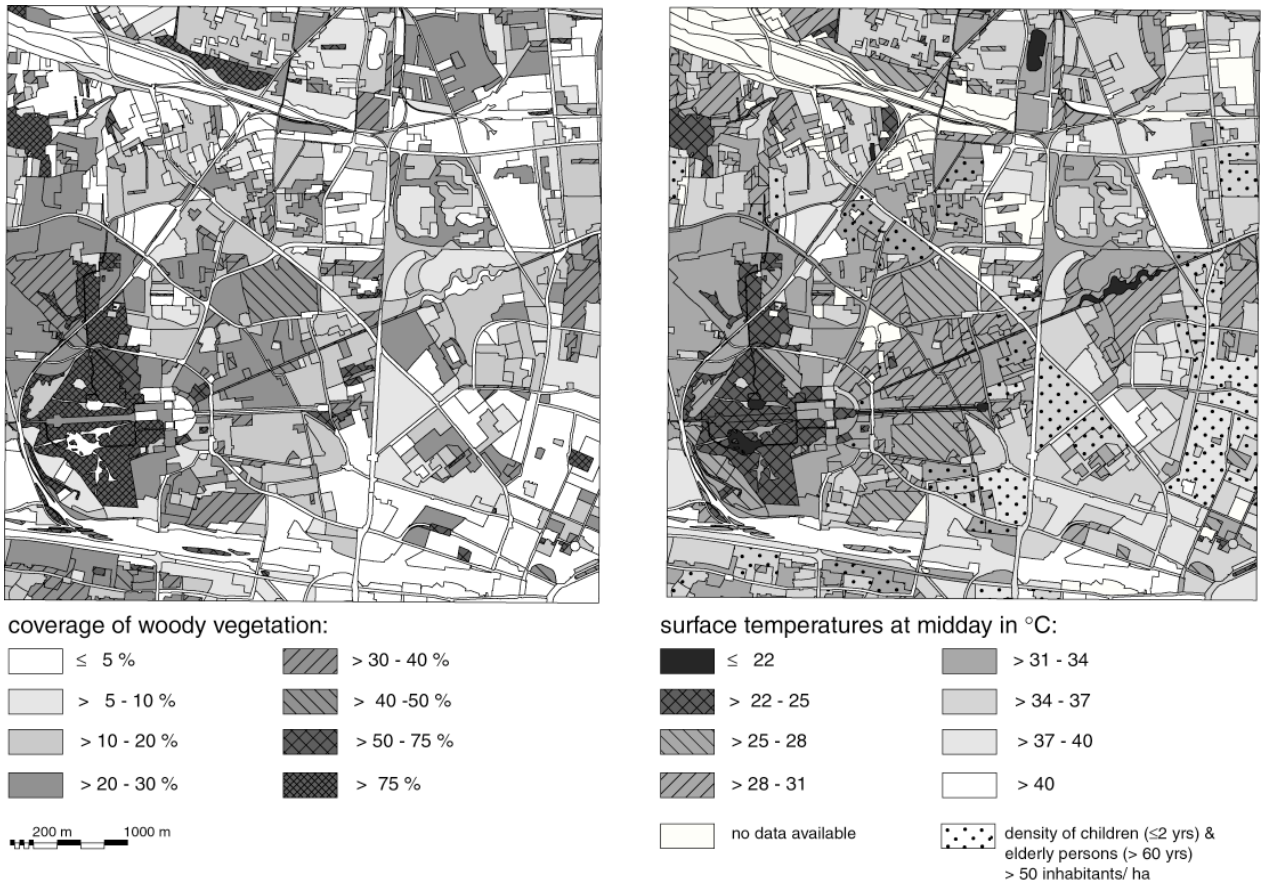


Figure 3.4 Relation between the spatial distribution of woody vegetation and surface temperatures in Munich

(adapted from Pauleit and Duhme, 2000).

3.3 Standards: arguments for and critique of green space standards

No publications could be found specifically dealing with the standards proposed in the ANGSt model. However, some publications provided discussions of the greenspace standards, mostly referring to the NPFA's *Six Acre Standard*. Most of these documents were policy reviews (e.g. Kit Campbell, 2001) or planning documents (e.g. Waters and Smith, 1999).

The setting of standards can strengthen the role of green space planning, in particular when standards relate to National and Regional Planning Policy Guidance. Adopting the standards approach can facilitate communication and negotiation with other disciplines and stakeholders which also rely on standards.

The wide use of the National Playing Fields Association's *Six Acre Standard* was quoted as an example of the success of standards. In a similar way, the National Society of Allotment and Leisure Gardeners has put forward a separate standard to provide for 20 allotment plots per 1000 households. Most London Boroughs have applied a 'Hierarchy of Publicly Accessible Open Space, originally formulated in the Greater London Development Plan (GLDP) (GLA, 2001a). The hierarchy (see section 5.3) requires a minimum recruitment of open space, from the local to the city level. Standards of this kind set a clear baseline against

which the current state and the success or failure of policies and plans can be measured (Box and Harrison, 1993). London Boroughs map areas of deficiency showing where accessible natural green space standards are currently not met, and hence where action has to be taken (LEU, 1992; GLA, 2001, oral comm.).

While standards can provide an incentive for action, these were also strongly criticised. The critique mostly referred to standards for the provision of open space for leisure such as the National Playing Fields Association *Six Acre Standard*. The arguments brought forward against open space standards can be summarised as follows (Box and Harrison, 1993; Marriott, 1999; Dolphin, 2000; Kit Campbell, 2001; GLA 2001c, Harding, 2000).

a) Lack of scientific foundation: open space standards are rather arbitrary and not based on scientific evidence.

b) There is an over-reliance on simple quantitative standards ignoring quality, accessibility, resources and sustainability.

c) Lack of specificity and consideration of the urban context: open space standards are universal and do not take into account the needs of the local community and the specific context of the urban landscape. They also fail to take into account environmental, geographical and social variation.

d) Standards for the provision of leisure facilities and recreational open space focus on 'traditional' and largely formal western sports but do not take into account other needs of the local community.

e) Standards are rigid and do not adapt to changing needs.

f) Open space standards such as NPFA's *Six Acre Standard* are often not achievable and thus can be viewed as inappropriate in already densely built up areas.

g) Open space hierarchies are used to assess deficits, but few realistic proposals are made about how to relieve the deficiencies identified. Rarely is the provision of sizable new open space a possibility. The question of management of open space is not addressed by existing standards.

h) Lack of integration of different types of standards. These can be complementary or overlap, thus complicating their application in the planning process.

i) Standards are insufficient as planning tools on their own. There is a need for open space strategies which are cross-departmental and which take account of multi-functional purposes.

Several recommendations are made in the literature to overcome these difficulties (Pauleit and Duhme, 1995, Waters and Smith, 1999; Dolphin, 2000; Campbell, 2001):

1. Taking a demand-led approach: the limitations of standards should be supplemented with other means of assessing demand such as user and household surveys.

2. Standards should be based on scientific evidence and clearly relate to the performance of open space (e.g. reducing air temperatures, providing habitat for wildlife) in purely environmental terms and in the social benefits provided.

3. Standards should vary to account for local variations such as geographical location, urban types (e.g. different standards for large metropolitan areas, and small market towns), and differences between neighbourhoods.

4. Standards for open space need to be placed into the context of open space strategies which are cross-departmental and which take account of multi-functional purposes.

German cities such as Leipzig have adopted 'Environmental Quality Goals' comprising targets to protect habitats as well as local standards, e.g. to reduce air temperatures in the inner city (Stadt Leipzig, 1996). Quantitative targets and standards for provision of green space to improve urban climates and provide habitats for wildlife were proposed for the City of Munich, based on an analysis of urban green space provision and its impact on local environmental conditions (Pauleit and Duhme, 1992, 1995). This approach defined targets of environmental quality for strategic planning on a supply and demand-led basis.

3.4 Barriers to implementing the ANGSt model:

No scientific publication could be found specifically discussing the ANGSt model. However, during the **expert interviews** a number of issues were raised which were seen as problems for the implementation of the ANGSt model. The main difficulty was seen in the lack of clear guidance for the application of the model. More specifically, there was seen a need to provide:

3.4.1 Clear and operational definitions of natural greenspace

When asked, only 16% of the interviewed experts considered the definition of naturalness provided by the ANGSt model, i.e. as areas *naturally colonised by plants and animals* (Harrison *et al*, 1995), to be clear and practical. In theory, the definition would exclude all man-made types of vegetation. However, these predominate in urban landscapes and can have high biodiversity value. Moreover, the definition would discourage the further active creation of habitats. Taking the definition strictly would require complete knowledge of the site history in order to decide whether a site has been naturally colonised or is the result of planting and extensive management. Since most visitors to a site probably could not tell the difference and would not find the distinction significant, the end result can be considered more important than how it came to be.

Alternatively, natural greenspace could be identified as places where human control and activities are not intensive so that natural processes are allowed to predominate. This would be a more inclusive definition of naturalness as, for instance, plantations which are not managed, would be considered as natural. However, at which point do natural processes predominate? This is difficult to determine and it can be argued that there is considerable room for interpretation.

The GLA has based the survey of natural greenspace on a manual for a Phase I habitat survey adapted to the London situation. This approach identifies the habitat types of nature conservation interest and eventually evaluates sites to a range of criteria which include those

of social benefit. While this approach does not solve the theoretical question, it offers a pragmatic solution to the challenge of defining natural greenspace, though in a manner requiring significant expertise and resources. Urban habitat surveys have been undertaken in many cities and towns in Europe, and thus are a well established method. The advantage of this approach is that it provides clear criteria for the delineation of natural greenspace based on habitat characteristics which can be readily observed from aerial photographs and in field surveys.

The definition of natural green space should also be compatible with established designations. It was suggested in the expert interviews that the accessible natural greenspace standards fit in with the national guidance on 'Sites of Importance for Nature Conservation' (SINC) currently prepared by English Nature for DEFRA.

The studies of woodland use and preferences in Redditch (Cole and Bussey, 2000) and greenspace use in Greenwich, London (Burgess *et al.*, 1988), offer a different way to identify natural places in an urban environment. Respondents in Redditch considered natural greenspace as the opposite of urban, and intrusions such as signs of neglect and tipping were negatively affecting this image. There was no distinction made between conifer or poplar plantations and ancient, semi-natural woodlands. The in-depth discussions with local people in Greenwich revealed that natural is much more understood in terms of being able to experience sensuous pleasures '*to touch, smell, see and hear elements of the natural world*' (ibid., p. 460). Burgess *et al.* (ibid., p. 461) continue to argue that

> '*it is apparent that people's awareness of nature in the city is very different to that catered for by conservationists. Conserving nature by setting it aside in a few key sites runs counter to people's need for contact with nature in their immediate localities*' to conclude '*our work suggests that some wild areas are more acceptable than others. .... Wilderness areas which provide adventures and creative play for children need to be integrated with environments in which other users feel comfortable too. ....Natural areas should be incorporated into the communal greens of housing estates and sub-urban developments*' (ibid. p. 471).

3.4.2 Rules on how to determine and measure access and distances

The definition of access was mostly seen as more straightforward. However, those who had worked with the ANGSt model acknowledged the difficulties of identification and measurement. Simply drawing an equal distance line around natural green spaces was judged as inadequate as this would not take into account the location of the access points, nor where the ways to the green space were and if there were barriers such as major roads or routes seen as unsafe. However physical factors are only one element in determining site usage, and ideally access considerations should equally reflect on socio-demographic features such as gender, age, culture, and ethnic origin. Ease of access was considered as a major issue to improve the use of green space, but awareness of access rights might also be a potential barrier.

The representatives from the Greater London Authority said that the 300m distance was not achievable in most of the densely built up London Boroughs. Therefore for London it was decided to adopt 1000m as a maximum acceptable distance between the home and the nearest green space of metropolitan or borough significance which is accessible. To identify areas of

deficiency, the real distance from green space entrances along access routes is measured. This was considered to provide a more realistic basis for policy in the prevailing local circumstances.

3.4.3 More flexibility as regards size criteria and the hierarchy

The ANGSt model proposes accessible natural green spaces of at least 2ha in size, and of increasingly larger sizes at the higher levels of the hierarchy. The minimum sizes were considered as somewhat arbitrary but it was acknowledged that this would be always the case. More importantly, the experts were more concerned that natural greenspaces smaller in size were ignored by the model. In particular in densely built-up areas, every natural site of natural green space can be important; small areas of rough grasslands and pioneer vegetation can support a diverse flora and fauna and help to break-up the hard infrastructure. The availability of the habitat is more important for these communities than a minimum size. Furthermore, in densely built-up areas, it would be often hard to create natural greenspaces of 2ha in size. The Greater London Authority therefore allows for smaller sites to be considered where they are located within areas that are otherwise deficient in provision.

Where cities are densely built-up, the standards suggested by the ANGSt model may not be achievable. Opportunities to create natural greenspace would exist mainly in the rural countryside outside the administrative boundary or on the urban fringe, but this would either be beyond the influence of the city or of limited relevance to those dwelling in the urban centre.

It was also stated that standards should reflect regional and local differences. This suggests that the application of standards should not simply be a top down approach. For instance, the higher levels of the natural green space hierarchy may be not applicable in small towns with good quality countryside on their doorstep. When asked, 72% of the experts interviewed felt that the application of standards was useful if the model used presented only aspirational comparative targets and left scope for local flexibility to set policy according to local circumstances.

Whether green space networks are habitat corridors was viewed with some scepticism by the representatives of the Greater London Authority, but no doubts were expressed about the value of linking green spaces to enhance access to and movement within green space sites. The Greater London Authority has just published a *Scrutiny of Green Spaces in London*. in which the concept for a green space corridor in the south west is shown as an example of good practice (GLA, 2001c).

3.4.4 Comprehensive information on the provision and quality of green space

The literature review and the interviews with local authorities and experts showed that there is still a huge information deficit on greenspace. This was considered as a major impediment to the implementation of the ANGSt model, and beyond, to the adoption of any forward looking green space strategy and management. For instance, the report of the Green Space Investigative Committee for London states that:

> '*There is no up-to-date and authoritative record of London's green space. This is a shocking deficiency for a city which aims to be a beacon in urban planning and design*.' (GLA 2001c, p. 14).

This situation can be seen in many locations across England.

Local authorities often hold only incomplete information on public green space whereas information on other green spaces such as those in private and institutional ownership, is completely missing or not available. It seems hardly possible to plan and manage the urban green space resource in a rational way if no information exists on its current status. Data are in particular required on:

- quantitative provision of greenspace by categories. Figure 3.5 gives an overview of the different types of open space which can be distinguished in urban areas;
- quality/condition of greenspace;
- functions and services of greenspace: biodiversity, environmental services, recreational use, landscape character etc;
- access to greenspace;
- ownership of greenspace;
- land use planning status of greenspace sites;
- available resources to support policy and management planning.

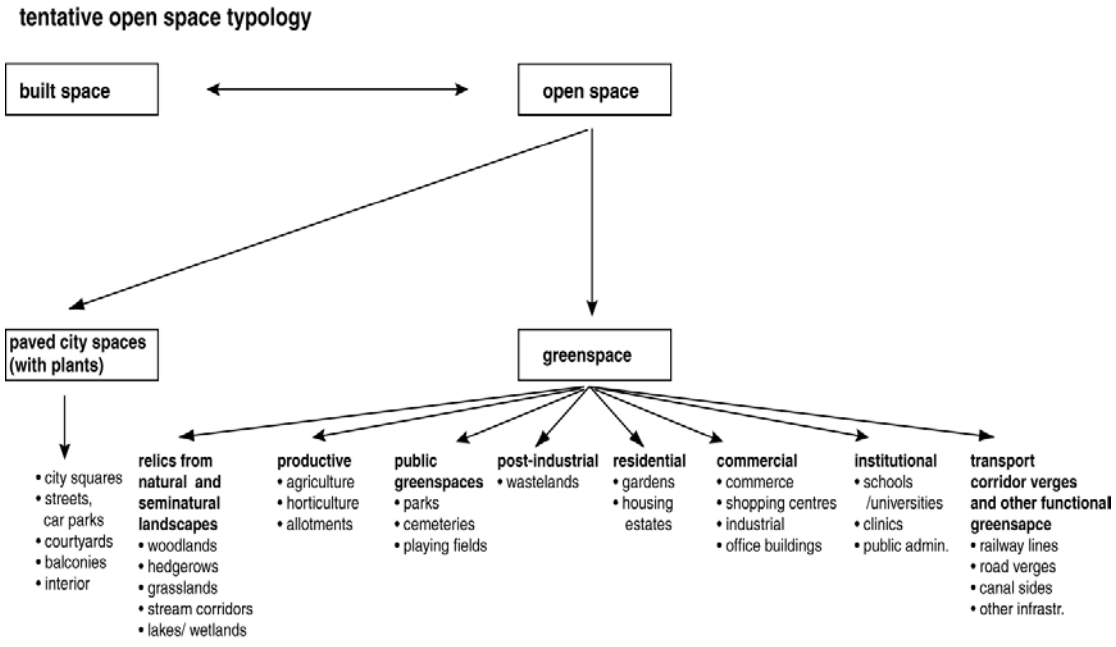


Figure 3.5 A potential typology of open space

The National Biodiversity Network and local Biological Record Centres are active in this respect, and their work could provide a useful resource for local authorities. The local Biological Record Centres are intended to be the local nodes of the National Biodiversity Network, managed by local stakeholder partnerships and acting as *"a local access point for information on local species, habitats and sites"* . The National Federation for Biological

Recording[3] currently lists 39 active local BRCs in England and Wales, structured usually at a county or conurbation level.

3.4.5 Geographic information systems

The development of a geographic information system was considered as an important tool for implementing the ANGSt model by 58% of the experts interviewed. The Countryside Agency for Wales mentioned as a successful example their information system on accessibility to the countryside. The Greater London Authority is in the process of building up a geographic information system for accessible natural green space. The City of Leicester has mapped accessible open space on a GIS system, and it now plans to identify accessible natural green space. There are also now a number of GIS-compatible software systems for the recording of biological data with reference to sites and habitats. One example of this is the Recorder 2000 software developed by the Joint Nature Conservation Committee. It is therefore possible to bring effective electronic tools to bear on the implementation of ANGSt.

3.4.6 Planning and implementation

There is a need to clearly relate ANGSt to policies and plans, as the model's perceived lack of any formal standing may be a major factor in its low rate of usage. The use of planning gain, in particular in areas with a high development pressure, and section 106 agreements as mechanisms to create and manage green space were mentioned as mechanisms with the potential to help local authorities improve the provision and management of natural greenspace. Moreover, it was considered important to include the ANGSt model in some form within supplementary planning guidance. There is scope for the use of the planning system in innovative ways to support the aims of the ANGST model, for instance in the employment of Section 106 agreements in connecting together and improving small or relatively poor quality greenspaces, and in the promotion of new concepts such as green roofs and walls in areas where other options are not feasible.

It was also suggested that ANGSt might be included as a best practice indicator to benchmark Local Authorities in the Best Value review.

Cross-boundary cooperation between Local Authorities would often be required to implement the higher levels of the ANGSt hierarchy. English Nature Local Teams were regarded as potential facilitators to initiate and promote this process.

3.4.7 Funding and better management of existing green space

Cut backs in funds to manage existing open space was seen as a major threat. Natural areas requiring specialist management (and outputs seen as low priority or of little economic significance) are among the first to be hit. Section 106 agreements were seen as particularly important to generate funds for the management of green space. However, it was considered as a problem that sums commuted for open space often last only for short periods of time and may not be used for other purposes. The role of Section 106 agreements is open to review under the Government's Green Paper on the planning system (DLTR 2001), and it is considered likely that the end result of this could be a more flexible mechanism, which would have increased potential as a tool to support the ANGSt model.

[3] National Federation for Biological Recording website at www.nfbr.org.uk

3.5 Summary of results from literature review and experts interviews

The literature review and interviews with expert organisations can be summarised as follows:

1. There is already great and increasing evidence on the environmental, social and economic benefits of green space in general. Recent studies corroborate the evidence already presented by Harrison *et al.* (1995). Urban biodiversity is clearly related to the existence of natural area, whereas for environmental services such as climate improvement the overall provision and structure of green space is more important. Health related issues are increasingly important now, and research has clearly demonstrated the need to enable nature experience in the city. These studies also show that private gardens cannot substitute for accessible public green space.

2. The size and accessibility standards proposed by the ANGSt model are supported by studies on parks use, as well as environmental/ ecological studies. Whereas size is considered to be more important for biodiversity, access is in particular critical for the recreational use of public open space. Environmental and landscape ecological studies stress the importance for holistic approaches to the planning and management of all green spaces in urban areas. Greenspace planning and management require an understanding of the ecological and environmental functions of greenspace, their dynamics (e.g. through succession), and their interaction with the surrounding matrix of built and other open spaces on the different levels of a greenspace hierarchy.

3. Protection, conservation and planning of green corridors are important to protect biodiversity, and provide access to green spaces and the countryside for recreation. The way in which this can work in practice in urban areas has recently been illustrated for Telford by Box *et al.* (2001, Fig. 3.6).

4. Open space standards such as the NPFA's *Six Acre Standard* were criticised, mainly because they were seen as overly simplistic and being purely quantitative whereas green space quality was not considered. Greenspace standards can however be an important aid to defend existing green space and to provide new green space in urban development. As a conclusion, ANGSt should be integrated into a comprehensive approach to green space planning, and should be defined locally to account for varying circumstances, such as existing levels of provision and community demand for additional greenspace or for change in the balance of provision.

5. Specific recommendations were made to improve the ANGSt model. In particular there is a need to provide unambiguous, practice oriented definitions of natural green space and accessibility. Different suggestions to defining and mapping natural greenspace have been made. Traditionally, the definition of naturalness is based on scientific criteria. The Phase I mapping manual adapted to the urban context was proposed as a well established method to map natural greenspace, although it is resource-hungry. Additionally, it may be possible to develop complementary approaches based on community perceptions. The development of Geographical Information Systems in combination with global positioning systems and the internet, provide the technical capabilities for such an approach, but further research is needed before a more widespread application of this approach can be developed, and this too is likely to place heavy demands on resources.

6. Protecting existing green space and improving its management was seen as the most important current issue. Open space reviews such as the significant report *Rethinking Open Space* (Campbell, 2001) have stressed the need to reverse the decline of public open space.

7. The lack of a comprehensive information base on the provision and condition of green space was identified as a major obstacle to a successful approach to green space planning and management. A survey of urban greenspace, a classification of greenspace types and assessment of their performance, are a prerequisite to planning and management of the greenspace resource. The different approaches to define urban nature from an ecological and a social perspective show that greenspaces can be valued from more than one perspective. Therefore, the survey of greenspaces should be comprehensive and multi-purpose. Criteria for the evaluation of greenspace should be clearly distinguished from the inventory. A geographic information system (GIS) is a necessary tool to manage and interpret this information.

8. In order to successfully implement the ANGSt model, three key issues were identified. Relating implementation clearly to all significant policies and plans promotes an integrated approach whereby the ANGSt model is informed by, and in turn informs, other key development planning priorities. Developing information sharing with neighbouring local authorities is necessary to readily account for greenspace outside of an administrative area which might be a popular resource for residents within it. There is also a need to develop innovative mechanisms to resource greenspace creation and management if improvements in the amount of provision and its quality are to be sustained. This might include the development of partnership approaches to promote joint action with neighbouring authorities, government agencies, non-governmental organisations and community groups.

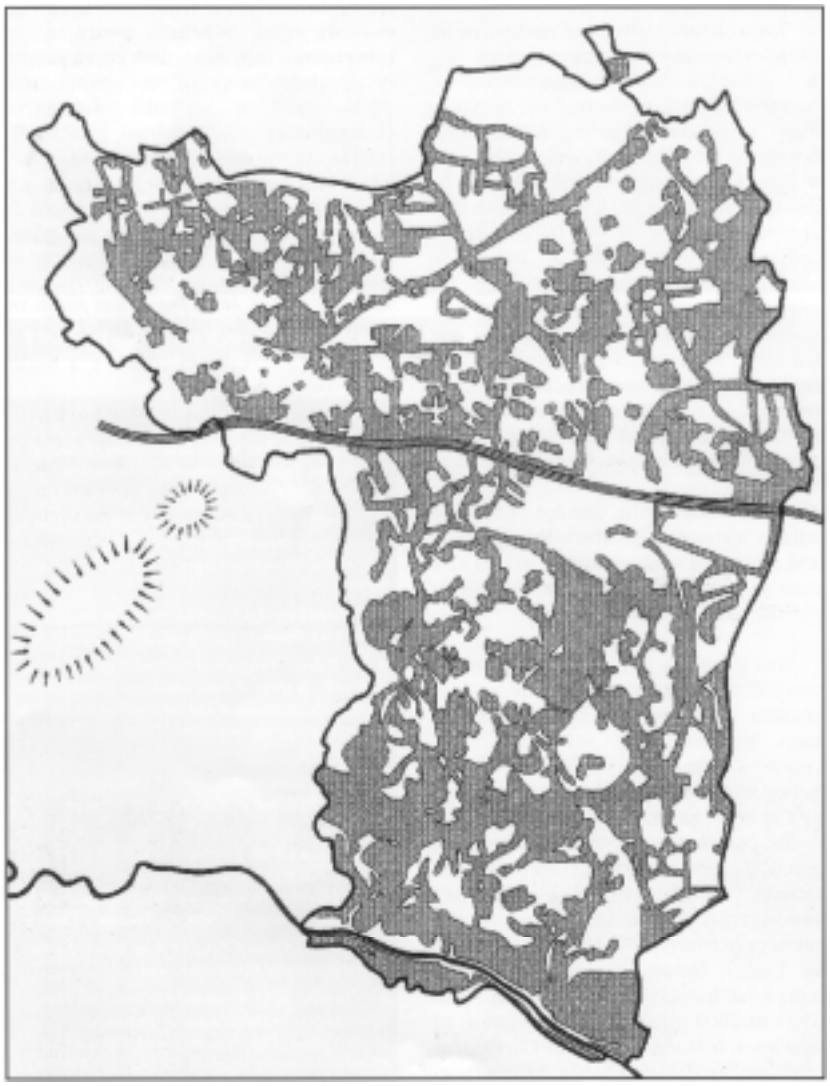


Figure 3.6 The green network of Telford

(Box *et al.*, 2001)

4. The current state of practice

4.1 Introduction

In the previous chapter a review of the ANGSt model was undertaken in the context of recent developments in the literature greenspace issues, of the prevailing climate of official policy and of opinion amongst interested 'experts'. The purpose of this chapter is to contribute a practical flavour by examining current greenspace planning and management practice among a sample of local authorities and highlighting factors relevant to the furtherance of the ANGSt model.

While Appendix A provides a full discussion of and rationale for the research methodology used in the local authority survey, it is appropriate here to provide a brief summary. The local authorities of England were divided up according to the 'urban type' classification of the 1991 national census, and five were selected at random from each of the six most urban categories (Figure 4.1). A sample of thirty local authorities having been established, a structured telephone interview was conducted with a representative of each and the results recorded for later analysis. The advantage of this stratified sample was that it allowed for the survey to take into account in an even way the variations in urban landscape within the English local government structure. The variations between the categories can be seen in a direct comparison (Table 4.1).

Table 4.1 Comparison of example local authorities within survey sample, by urban type

Urban Type	Example Authority	Size (ha)	Population	Main Urban Area	Population
London Borough	Westminster	2,204	244,600	Westminster	244,600
	Barking & Dagenham	3,419	144,000	Barking & Dagenham	144,000
Metropolitan Borough	Manchester	11,500	400,000		
	Newcastle- upon-Tyne	11,200	278,000		
Shire District	Blackburn with Darwen	13,700	137,000	Blackburn	102,000
	Hinckley & Bosworth	29,757	98,600	Hinckley	42,118
New Town	Northampton	8,066	196,000	Northampton	196,000
	Sedgefield	21,740	90,000	N. Aycliffe	28,500
Resort & Retirement	Canterbury	30,884	141,300	Canterbury	45,200
	East Dorset	35,446	85,600	various	18,000
Mixed Urban-Rural	Salisbury	11,491	111,000	Salisbury	39,400
	Selby	61,383	72,000	Selby	12,000

However, while the stratification of the survey by urban type provided a useful tool for analysis, it must be noted that, in reality, the categories blur considerably into one another in terms of the urban landscapes they contain. Thus there are authorities classified as 'resort and retirement' that encompass significant urbanisation (e.g. Brighton and Hove), while some 'new town' authorities might, in terms of urban landscape, fit just as well with the 'mixed urban - rural' category (e.g. Sedgefield). Caution is therefore necessary in drawing conclusions about comparisons across the different categories, particularly as this does not indicate other factors peculiar to each locality, such as the nature of the landscape within which they sit and historical factors that have driven the development of the current urban form.

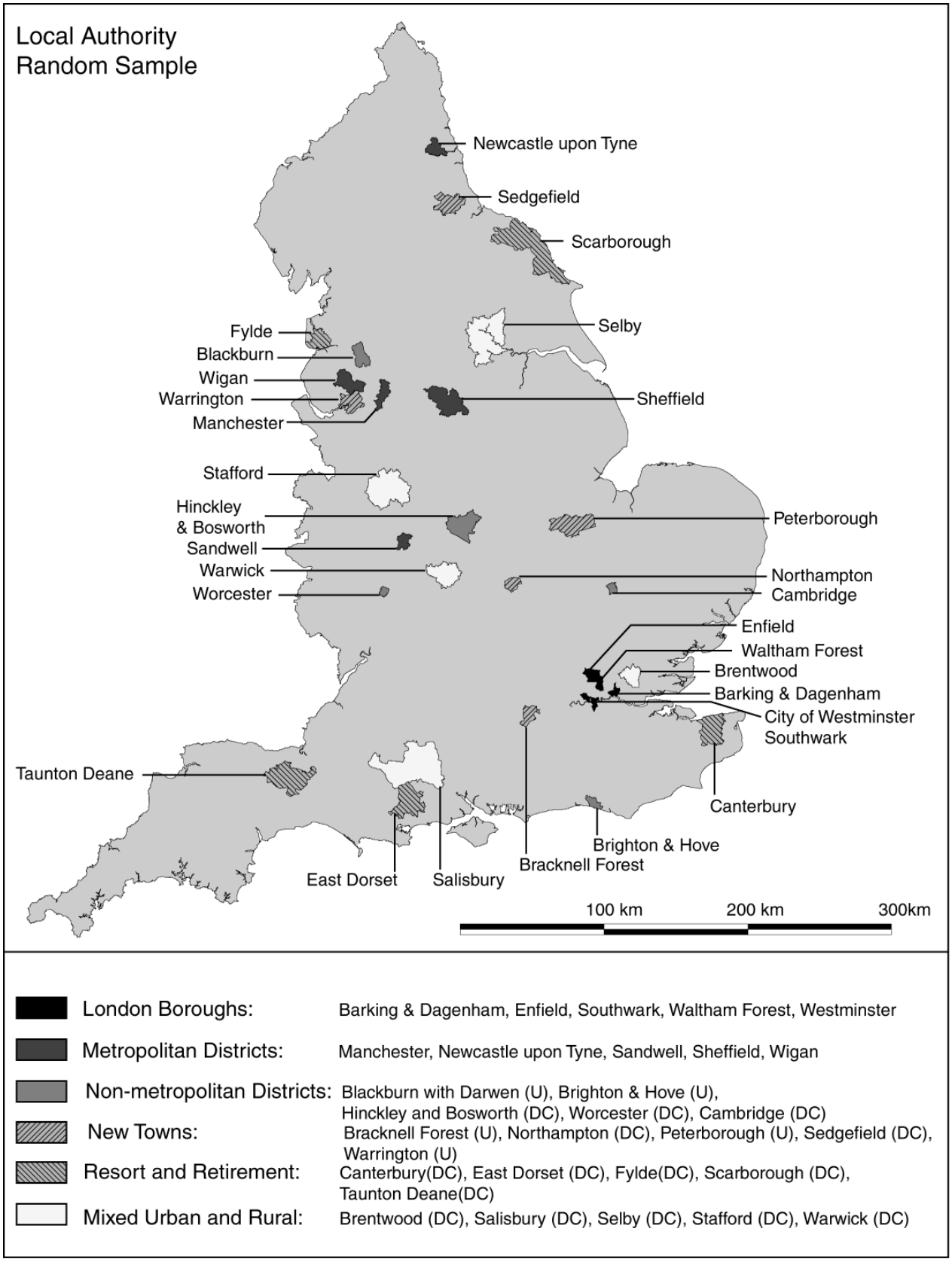


Figure 4.1 Local Authority Stratified Random Sample

(U = unitary authority; DC = 2nd tier shire district)

Within the local authorities, two main groups can be said to have key roles in respect to greenspace - those within the planning function who formulate policy for the local plan, and those actively involved in practical landscape management and nature conservation. Both groups were felt to have valid contributions to make, though perhaps from different perspectives, to a debate on natural greenspace standards, so both groups have been covered by the survey. Limitations of time and resources precluded the inclusion of more than one interview per local authority, and so in some local authorities a planning policy representative was interviewed while, in others, the survey gathered views from the other perspective. However many of those interviewed stated that they had, as part of their preparation, discussed the issues with their planning or service colleagues, while in two cases it was actually possible to obtain joint responses to the survey. Figure 4.1 demonstrates the breakdown of the interviewees by professional background.

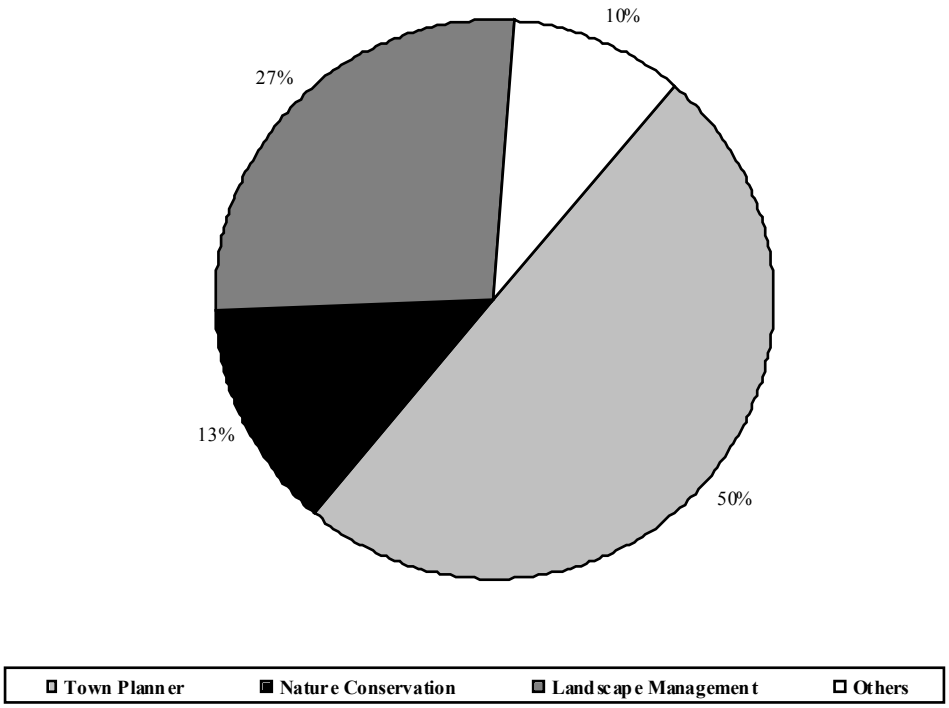


Figure 4.2 Interviewees by background

It can be seen from this that the survey was able to obtain a broadly balanced set of views, with 50% of interviewees from the planning function and 50% from among those directly involved with greenspace services.

This chapter will present the results of the survey by following the key themes addressed in the interview protocol. In particular the issues of organisational context, strategic policy, the use of (and barriers to the use of) greenspace standards, the information and systems base, and ideas for the future will be considered in turn, with key points contributing to the conclusions reached and recommendations made by this report.

4.2 Organisational structures

The national local government structures of which local authorities are a part, and the structures within the local authorities themselves, exist to deliver a broad range of services, of which those relating to greenspace are but a small and under-represented part. Local authority greenspace policies nevertheless operate within this context, which has important practical implications for the way in which functions related to greenspace are carried out. The survey did not set out to examine organisational structures in detail, but some interesting findings were nonetheless noted.

Most local authorities retain traditional structures that separate amenity open space from nature conservation and which might have further separations between parks, sports facilities and other spaces such as cemeteries and allotments. This fragmentation has been identified as a significant impediment to effective, coherent greenspace management, affecting the uniform implementation of policy, fragmenting the information base and resulting in inefficient competition for resources. A few authorities have reorganised to integrate greenspace under one roof with other related functions and have found it easier to take a strategic view as a result. However one boundary exists in every case - that between policy making and service delivery.

It must also be noted here that, even in urban areas, much operational work on sites is carried out by town and parish councils, at a level below the one we have surveyed. It is unclear quite what impact this might have on operations, as this was not specifically tested for. However moving in the other direction there are two models. Most authorities are self-reliant on greenspace issues, gathering data, identifying sites and organising designation and management in-house. However several examples have been found of authorities with limited in-house technical expertise, where the function of the assessment and identification of 'natural' sites is undertaken by county councils (e.g. Lancashire and North Yorkshire), which recommend sites for designation for nature conservation purposes under the relevant local plan.

4.3 Local authority greenspace policy

Almost without exception no figures for greenspace provision were available- it seems that most authorities inventory their open space without analysis- though it was possible to refer to the relevant local plan to reference the greenspace hierarchies and categorisations that are used. The most common arrangement is for detailed local plan policy coverage of amenity open space designed to meet the needs of the NPFA *'Six Acre Standard'* (or a local variant of it), but with coverage of natural greenspace limited to policies for the protection of sites with nature conservancy designations. There is little or no explicit coverage (or analysis) of 'Accessible Natural Greenspace', as defined by English Nature, at all. Sites that are not designated in some way do not tend to be recorded, while those that are designated are not evaluated strategically to gauge levels of provision. The use of the Local Nature Reserve (LNR) and Site of Importance for Nature Conservation (SINC), or similar, is widespread and the latter is often given a similar local title such as Biological Heritage Site, County Heritage Site or Site of Biological Importance.

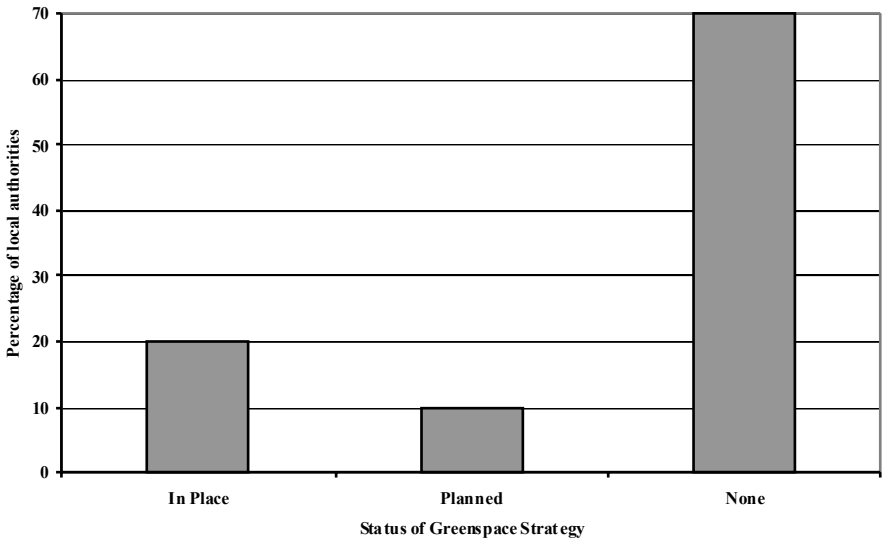


Figure 4.3 The development of greenspace strategies

The development of comprehensive greenspace strategies by local authorities is growing. Of those local authorities surveyed for this project, seven reported that strategies were in place, with three more confirming plans to develop one by the end of 2002. However this still leaves 13 authorities, a significant majority, with no such provision in place or planned. The situation is complicated by a plethora of other approaches that might cover some key greenspace issues, though in the context of other strategic priorities. Examples of this include the Biodiversity Action Plan, Nature Conservation Strategy, Cultural Strategy, Parks Strategy, Open Spaces Strategy, Greening Strategy, Trees Strategy, Riverside Walks Strategy and others. Those that focus on nature conservation/biodiversity understandably concentrate on the benefits to nature of what is planned, often neglecting amenity issues, while those concerned with the provision and management of recreational spaces concentrate almost entirely on amenity and do not consider the natural components of the spaces covered. Others might be addressing issues such as social inclusion or urban regeneration, referencing greenspace only in so far as it contributes to those other priorities. This is partly, but not entirely, a result of the fragmentation of responsibilities within many authorities but the general lack of a concept of *multifunctional space* is clear and may well prove to be a key obstacle to the successful implementation of ANGSt. While some authorities publish these strategies as discreet documents backed-up by policy, others simply include everything directly into the formal local plan document. In Figure 4.2 both of these arrangements are considered to indicate that a comprehensive strategy is in place.

4.4 The application of standards

The use of the NPFA *'Six Acres Standard'* is widespread within the sample, though in many cases it has been used as the basis for a locally developed variant standard rather than being adopted in its standard form. Of the local authorities surveyed, 80% were found to have adopted some form of greenspace or openspace standard, of which 75% were solely concerned with amenity greenspace and 71% of which referenced the 'Six Acre Standard'. Only 4% (a single local authority) of the sample had any standard for natural greenspace, and this was contained in draft proposals - though it was based on the ANGSt model. The remainder of the sample, 21% of authorities with standards in place, is accounted for by London, where a unique system applies in relation to SINCs.

The main reasons given for the high rate of usage of the *'Six Acre Standard'*, and for concentration on amenity spaces in general, were that policy guidance has stressed the importance of the protection of public amenity spaces for many years and has incorporated the NPFA standard, first developed in the 1970s, within the PPG framework. Because of this the sensitivity of development proposals affecting amenity spaces such as playing fields is well understood and the *'Six Acre Standard'* has become accepted by planners and developers alike.

The standards adopted are most commonly used in two ways; to prevent the further loss of established open space in mature urban areas (also to underpin requirements for compensatory provision for any greenspace lost to development), and to set out requirements for the provision of open space associated with new housing or other major developments (many having issued supplementary planning guidance in support of this). Rarely are these used to address existing deficiencies in provision.

4.5 Greenspace management

It was evident from the survey that local authorities are giving an increased priority to the management of green spaces. Figure 4.3 shows the extent to which site management plans are being used by local authorities. Only 13% reported that no site management plans had been put in place, while 23% reported that all sites had them. A further 50% had management plans for some sites, with the intention in most cases to implement full coverage in due course.

The adoption of greenspace standards was found to be widespread, but skewed towards consideration of amenity greenspace. This might reflect a significant growth in concern over the rapid loss of, in particular, playing fields to development and the publication by the National Playing Fields Association of the 'Six Acre Standard' and its subsequent incorporation into government planning policy guidance. Of the local authorities surveyed, 64% reported that formal standards based on the 'Six Acre Standard' were in use, while none reported any similar arrangement for natural greenspace, though a small number had informally evaluated or had included the ANGSt model within draft proposals.

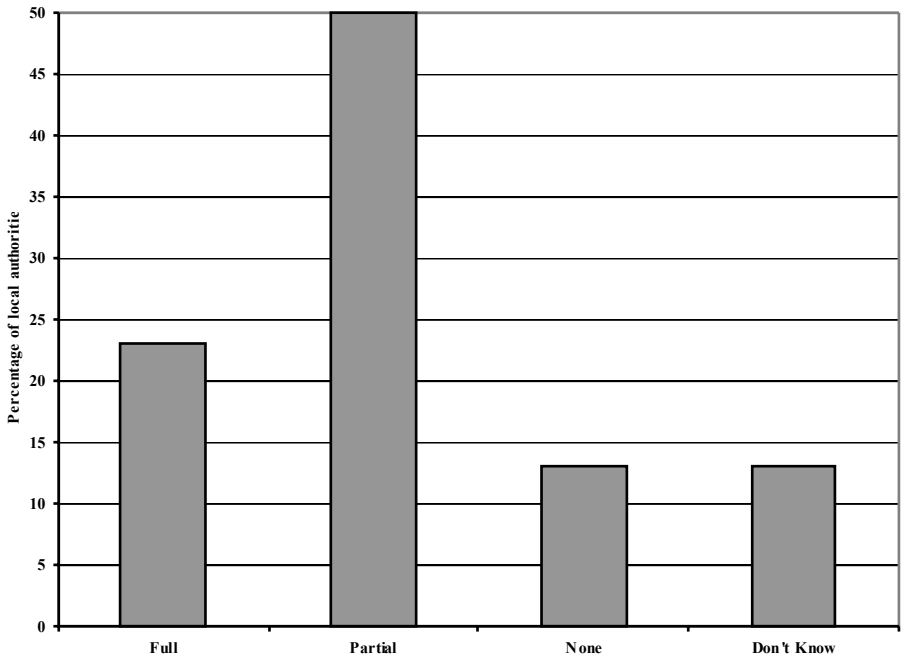


Figure 4.4 Coverage of site management plans

4.5 Information and systems

The use of GIS appears to be widespread, but not universal, among the sample authorities (Fig. 4.4), with a wide range of different systems in use.

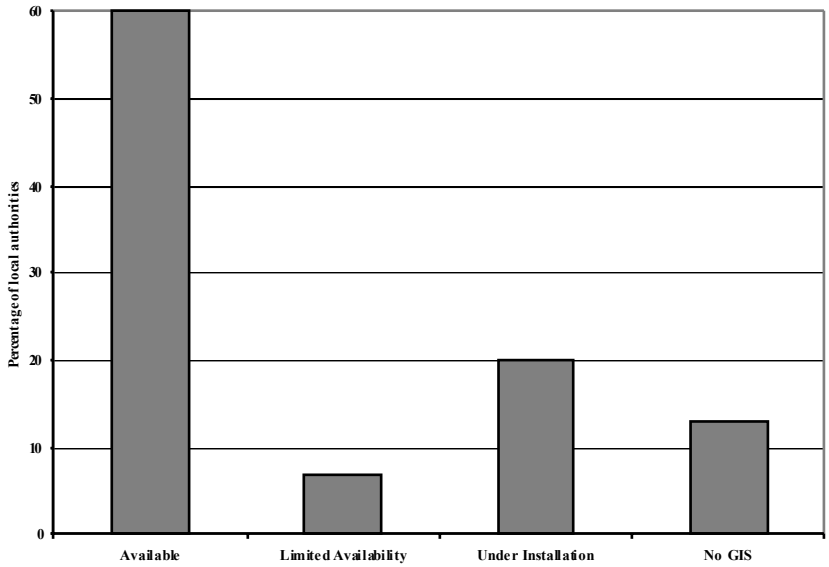


Figure 4.5 Availability of GIS

Figure 4.4 reflects the fact that GIS is becoming an essential tool for local authorities, but shows that its penetration is not yet total, although it is likely to be by 2010. The local authorities shown to have 'limited availability' of GIS had not made the installation a corporate priority, but the planning departments had purchased the software on their own initiative. The 'limited availability' category therefore reflects this position, whereby the software is available only to planners, with limited technical and training resources to support

its use. The authorities listed as having GIS 'under installation' actually had the software installed and were in the lengthy process of converting data from manual to digital form. Within the authorities surveyed, 11 different GIS systems were in use, a small number of authorities having more than one.

Most authorities collect data themselves, though 53% of those surveyed reported that they also worked with other local bodies for this purpose. In 43 % of authorities data reviews and updates could only be carried out on an *ad hoc*, irregular basis, as requirements arose or as resources became available. A further 43% did have data review programmes aimed to ensure that data remained current, with 58 % of these linked directly to the process of local plan review. The remaining 14% of interviewees were unaware of data collection procedures.

Most of those interviewed were unaware of the full range of greenspace data that might be held by other departments. Coverage was normally district-wide but covering only the open-space relating to policies within the local plan (there were exceptions to this where fuller, more systematic surveys were undertaken). There was a widespread perception among interviewees that the available data on greenspace was inadequate for the analysis of the resource, often out of date, limited in scope (often covering only land under local authority management or bearing a protection designation) and that in the prevailing conditions it would be unlikely that the resources to rectify the situation would be made available. It therefore seems likely that the adoption of ANGSt would require a significant data review and collection exercise on the part of many local authorities, with significant resource implications as a consequence.

The exercises to collect data for the National Land-Use Database and for Urban Capacity Studies might potentially be used to increase the information base on greenspace. Many authorities reported that they were conducting Open Space Audits, but that these would only cover amenity sites. There is little evidence of consideration of natural greenspace, of land in private or institutional ownership, or of small and 'waste' sites.

In summary, authorities approaches to the recording of greenspace are very variable, reflecting the variation in the detail and scope of local plan policy previously outlined above. Phase I habitat survey data is widespread (approximately 50% of the local authorities interviewed reported at least partial survey coverage), though there was concern in some cases that the data was more than 10 years old and was unlikely to be updated in the near future. Most authorities have, or will soon have, access to a county (or equivalent) Biological Records Centre, which could be potentially useful in co-ordinating data (particularly trans-boundary) required to underpin the implementation of ANGSt.

4.6 The ANGSt model

The survey showed that levels of knowledge and use of the ANGSt model by local authorities were low (Fig4.5). It was found that 43% of interviewees had known of the ANGSt model prior to the survey, but only 10% reported any attempt by their local authority to evaluate or implement it. Only 27% felt that their knowledge was sufficient to give an opinion on its content. This is likely to be a reflection of English Nature's efforts to promote the model rather than the appropriateness of the model itself.

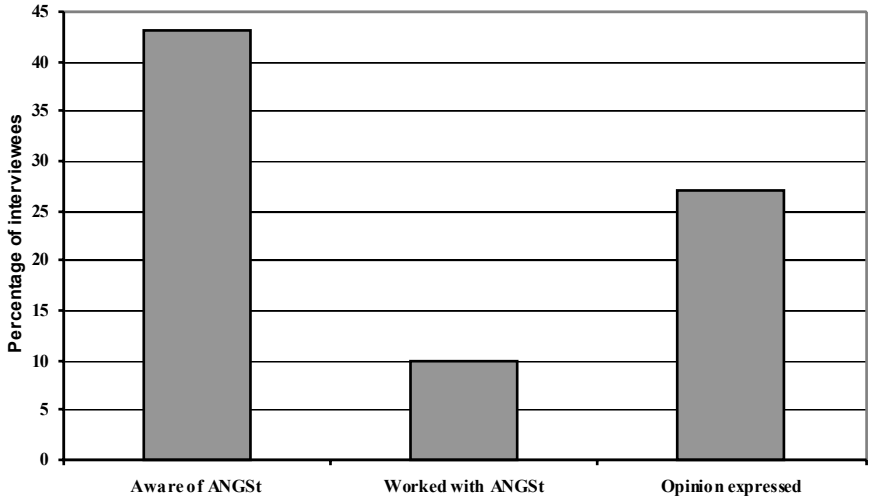


Figure 4.6 Awareness of the ANGSt model

From the data gathered by the survey it is possible to identify a number of factors that might constrain the take-up of the ANGSt model by local authorities. Table 4.3 sets out these barriers to implementation, loosely categorised as arising from the technical requirements of the ANGSt model, or from the institutional framework within which implementation would take place.

Table 4.2 Barriers to the implementation of the ANGSt model

Technical barriers	
Problematic definitions of 'natural' and 'accessible'	The definitions given within the original model are difficult to interpret and apply effectively and consistently.
Difficulty of mapping accessibility effectively	The effective mapping of accessibility distance criteria to take account of access points and route constraints is technically demanding, requires highly detailed data and is time consuming. Also, the use of a single distance is unlikely to fit the 'true' picture for all social groups.
Lack of qualitative criteria	The ANGSt model covers size and distance criteria, but not any assessment of the quality of natural greenspace. Access to a site can be constrained by poor quality.
Information deficit	Local authorities do not generally hold the range of data required to implement the ANGSt model.
Lack of implementation guidance	There is no companion implementation tool to support a local authority in working towards implementation of the ANGSt model.
Unsuitability in extreme urban landscapes	The ANGSt model can be said to be unachievable in many dense urban landscapes, and might be considered irrelevant in small urban centres surrounded by accessible countryside.

Institutional barriers	
Lack of awareness of ANGSt model	Undoubtedly currently the **single most significant barrier**, as with no knowledge of the standard a local authority cannot consider the practicalities of implementation. No fewer that 15 of 23 respondents ascribed non-implementation of the standard to lack of awareness.
Resource limitations	As a non-statutory service, greenspace management often loses out to other priorities in competition for scarce resources. This applies as much to the ability of forward planners to research and evaluate new tools and systems for policy development, as it does to land management and design professionals seeking practical means to improve services.
The influence of the local plan review cycle	The five-year cycle of local plan review can mean, in practice, that there is a relatively short time window for the evaluation and incorporation of new tools into policy proposals. In many cases local authorities have not seriously considered the ANGSt model simply because it was adopted by English Nature too late for the most recent review.
Lack of incentives	The lack of any official policy status for the ANGSt model has the practical consequence that it is easy to overlook in favour of other priorities, particularly as no additional resources are available to aid in implementation.
Fragmented management structure	The responsibility for greenspace is often divided among a number of service departments. This can hinder co-operation and cause wasteful competition for resources and a fragmented, uncoordinated information resource.
Additionality with other standards	The size criteria for sites under the ANGSt model can be seen as potentially additional to similar requirements for amenity open space. This can be seen as increasing the burden on developers and planners unreasonably.

4.7 The way forward

Most authorities reported that greenspace issues had a high or rising political profile, often driven by the results of community consultations. However this was not always reflected by the commensurate allocation of resources, as statutory requirements and government guidance were given priority. The main local priorities seem to be centred on strengthening greenspace protection and improving management, though other issues, particularly the need for enhanced resources, were also stated. Several authorities reported a tension between the desire to increase site provision and the need to maintain and improve the quality of the existing greenspace resource. In a climate where the availability of additional resources was said to be questionable, this tension is unlikely to be easily resolved and might be exacerbated by the requirements for provision set out in the ANGSt model.

The concept of the ANGSt model was, nonetheless, generally thought to be a welcome and positive one, though caution was expressed about its provisions being implemented as a requirement on local authorities - the idea of a national benchmark, accommodating local discretion, was preferred. When interviewees were asked how the ANGSt model could most effectively be furthered, two responses dominated:

- by inclusion of the ANGSt model within the Government system of planning policy guidance. This would remove ambiguity, promote consistency of approach, ensure better resourcing and give the system strength within local planning policy to withstand legal challenge;

- by more active provision of targeted, high quality information- in print, through networks for information exchange, through seminars and conferences and by use of the new media, such as the internet.

A number of other suggestions were made, including a recommendation that English Nature should further the model by using its influence as a consultee on local plan development and Regional Planning Guidance preparation; through the initiation of fully supported pilot projects to develop exemplars for others to follow; and by providing central resource support (such as by aiding with collecting and making available key data) to local authorities wishing to move forward.

Opinion on the features of a useful tool-kit for those working with the ANGSt model was varied, 68% of interviewees expressed a view, but the idea was generally welcomed as a positive step forward. Listed below in Table 4.4 are the suggestions made, in order of the most often to least often mentioned:

Table 4.3 Desirable feature of an implementation tool-kit

Desirable Feature	Rationale
Simplicity and clarity (13 mentions)	The model is likely to be more enthusiastically taken-up and effectively utilised if it is supported by a tool-kit that explains its requirements simply and clearly, with a practical slant. A tool-kit that was over-complex and asked for too much data analysis would be unpopular with users.
Provide a step-by-step, comprehensive 'how to' guide (8)	Ensure that the tool-kit is a 'one stop shop' for implementation guidance, including data requirements, needs analysis, the provision of consistent assessment criteria and including coverage of multifunctional spaces. Layer the guidance in a logical way and ensure that it operates effectively at different spatial scales.
Compatibility with GIS Systems (5)	The use of GIS is now widespread within local authorities for data analysis and is fast becoming the standard tool for spatial planning. A tool-kit must therefore provide guidance on the use of GIS in respect to the implementation of ANGSt.
Examples of good practice (3)	A good way to demonstrate good practice is by using the successful experience of others in the local authority sector to which new users of the ANGSt model can readily relate.
Establish an 'Implementers Network' (3)	Provide a forum/network for information exchange between local authority implementers, and with English Nature. This might aid the rapid spread of good practice, provide a peer support structure for those that need it, and would enable English Nature to disseminate information quickly and in a targeted way.
Make use of the internet (2)	The internet is now established as a primary means for information exchange, and provides an opportunity to enhance the outreach of an ANGSt tool-kit.
Allow flexibility for local circumstances (1)	A single, inflexible standard does not fit well into the full range of urban landscapes in England, proving unachievable in some, already exceeded in others. Local policy makers should have some freedom to fit the model appropriately into the circumstances in which it must operate.
Allow for lack of GIS (1)	Not all local authorities yet have GIS systems, but may still wish to implement the model.
Provide funding guidance (1)	External sources of funding are important ways in which local authorities can seek to obtain additional funds for greenspace projects. Identifying the key schemes and summarising application procedures would be very helpful.

Desirable Feature	Rationale
Provide a 'skeleton' model database(1)	Provision of a blank database format would set-out a nationally consistent information standard and would ensure consistent collection and storage of data. It would also represent a considerable saving to local authorities that might otherwise need to develop systems individually and independently.

The concept of holding practitioner discussion workshops at the end of the project was widely welcomed and all interviewees asked to be kept informed if any such events were planned.

4.8 Summary

The local authority survey has revealed that, while a variety of greenspace initiatives are being pursued, few local authorities are actively working towards the implementation of standards for accessible natural greenspace provision. This is primarily down to lack of awareness of the model, rather than its deliberate rejection. However there was interest in the concept of the ANGSt model and an appreciation that perhaps there are currently deficiencies in the way in which local authorities handle natural greenspace issues.

A number of barriers were identified to the furtherance of a standards-based approach on the ground and a range of potential approaches to solving these problems was highlighted. The idea of a decision support tool-kit to assist the implementation of the ANGSt model was welcomed, and a range of desirable features was identified.

In the following chapter, a number of case studies will be presented, showing how local authorities have successfully tackled key aspects of the application of a standards-based approach to greenspace provision.

5. Examples of good practice

5.1 Introduction

One of the central aims of this project has been to identify and illustrate examples of good practice by local authorities in implementing the English Nature ANGSt model. However this task has proved difficult because of the very few examples encountered of the ANGSt model being fully implemented. The survey of local authority practice presented in the previous chapter identified no examples of ANGSt having been operationally implemented, and only 3 examples of the model having been evaluated or included in draft proposals.

However, examples were found of the implementation of principles potentially key to the ANGSt model, and it was also felt that useful illustrations of key themes could be drawn from the experience of those local authorities which had conducted evaluation work on the ANGSt model, or which had in place systems in some way similar. Therefore the case studies set out in this chapter are in many ways quite different and have been chosen for particular aspects of their policies in relation to greenspace. It is intended therefore that this chapter, taken as a whole, will provide illustrative examples of good practice on a range of different aspects of greenspace planning and management.

5.2 Evaluating the ANGSt model in the City of Manchester

Manchester is rapidly developing the sophistication of its approach to greenspace management. The City Council has established a high-level Environmental Strategy Group with greenspace as one element of its remit, has been successfully running the Manchester Greenspace Management Project (in association with the Countryside Agency) and has published the strategy document *Parks for all Seasons*, which sets out a framework for improvements in greenspace management within the city. Manchester is an active participant in Community Forestry initiatives and is seeking to develop the connectivity of its natural greenspace resource so that a city-wide network might eventually develop.

As part of this move to further improve services, Manchester has conducted some evaluative testing of the English Nature ANGSt model with a view to its adoption in the future. The mechanism for this was as part of a Masters degree thesis project of a member of staff, sponsored by the City Council, for part-time postgraduate study. The project involved the assessment of local authority-managed greenspace and the identification and mapping of sites, using GIS, according to the requirements of the model (see Figure 5.1). This example is interesting because it neatly illustrates many of the barriers to successful implementation of the standard, as well as some of the principles for its successful mapping.

The map shown at Figure 5.1 has been developed by locating accessible natural greenspace and mapping its boundaries by use of GIS. These sites have then been classified according to the size criteria specified by the ANGSt model and the accessibility distance criteria added uniformly from the site boundaries. The map produced in this way is very revealing for a number of reasons:

- in order for the ANGSt standard to be met in Manchester, the entire area within the administrative boundary must be covered in both green and red delineated zones. The

presence of large areas where red, green or both are absent indicates that large areas of Manchester are deficient in the provision of natural greenspace;

- no consideration of larger sites and distance criteria, 100ha at 5km and 500 ha at 10km, has been attempted because no such sites exist within Manchester's boundaries and no information was readily available about such sites elsewhere. In this respect the exercise was incomplete;
- natural areas contained within major formal parks have been noted on the map, but lack of data has prevented their full inclusion. This includes several pockets of woodland larger than 2ha in extent, but for which survey data was incomplete due to survey data being held only for the entire site, and not for its 'natural' components;
- the mapping of accessibility has been done by simply imposing the stated distance criteria directly onto the map. This was because the time and data required to effectively map access constraints, such as points of access and physical barriers, were too great to be practical for this exercise.

This exercise has provided Manchester City Council with a very useful addition to its knowledge of its green space resource that could usefully inform policy even its current form. However in utilising the map, it is important to acknowledge the limitations of the exercise and to derive ways to move the study forward. The key difficulties encountered in performing the study were as follows:

- difficulties in applying the definition of 'natural greenspace' given in the ANGSt model. In order to render the project practical, a simplified and looser definition was adopted of *"Sites where natural processes (growth, reproduction and mortality) are allowed to dominate"*;
- information deficit limited the study to sites under local authority management within the administrative boundary of the city. Without the inclusion of sites in other ownership and those beyond the city boundary, the study is likely to over-estimate greenspace deficiency;
- more effective recognition of natural areas within sites predominantly used for other purposes is necessary. Such *multifunctional* sites have a key role to play and need to be effectively included within any study in order for it to be considered comprehensive;
- assessment of provision against the standard in this way supports the conclusion that the model may not be achievable in such heavily urbanised landscapes such as some parts of Manchester, in which provision is far below the required levels and where opportunities to increase it substantially may be infrequent.

Nevertheless even testing the provision of natural greenspace against the standard in this way does show patterns of provision and general areas of deficiency clearly and can contribute to effective planning. Manchester is looking particularly at developing more natural areas (woodland, wetland and grassland) within formal park settings, thus increasing the provision of natural sites within the city and enhancing the value of parks for the local community and for nature conservation.

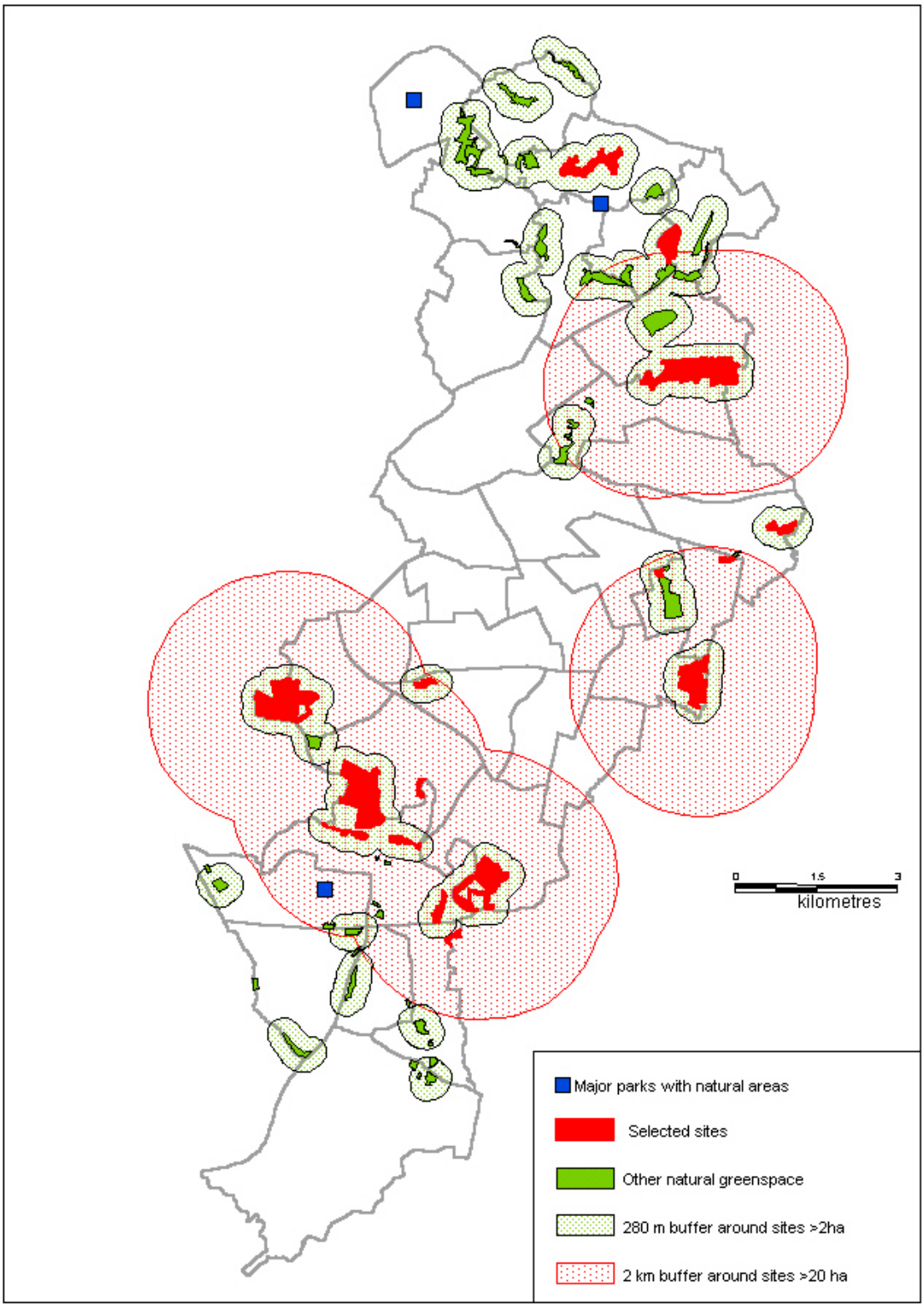


Figure 5.1 Mapping ANGSt in Manchester
(taken from Savage, 2001)

5.3 The London open space hierarchy and areas of deficiency

For many years London has operated a strategic approach to the management of its greenspaces across all 33 constituent Borough authorities and demonstrates how a useful system of standards can be developed in difficult circumstances. In 1976 The Greater London Development Plan set out a hierarchy of open space (see Table 5.1) which, in slightly modified form, is still in use today and which has influenced planning practice elsewhere. In more recent times the London Ecology Unit has provided strategic services in relation to nature conservation, while the London Planning Advisory Committee has provided city-wide strategic support to development control policy. Both organisations were abolished and absorbed into the new Greater London Authority in 2000.

Table 5.1 Types of publicly accessible open space in London

Type and Main Function	Approx. Size and Distance from Home	Characteristics
Regional Parks and Open Spaces (Linked Metropolitan Open Land and Green Belt Corridors) Weekend and occasional visits by car or public transport	400 hectares 3.2 - 8 km	Large areas and corridors of natural heathland, downland, commons, woodlands and parkland also including areas not publicly accessible but which contribute to the overall environmental amenity. Primarily providing for informal recreation with some non-intensive active recreation uses. Car parking at key locations.
Metropolitan Parks Weekend and occasional visits be car or public transport	60 hectares 3.2 km or more where the park is appreciably larger	Either (I) natural heathland, downland, commons, woodland etc. or (ii) formal parks providing for both active and passive recreation. May contain playing fields, but at least 40 hectares for other pursuits. Adequate car parking.
District Parks Weekend and occasional visits by foot, cycle, car and short bus trips	20 hectares 1.2 km	Landscape setting with a variety of natural features providing for a wide range of activities, including outdoor sports facilities and playing fields, children's play for different age groups, and informal recreation pursuits. Should provide some car parking.
Local Parks For pedestrian visitors	2 hectares 0.4 km	Providing for court games, children's play, sitting-out areas, nature conservation, landscaped environment: and playing fields if the parks are large enough.
Small Local Parks and Open Spaces Pedestrian visits, especially by old people and children, particularly valuable in high-density areas.	Up to 2 hectares Up to 0.4km	Gardens, sitting-out areas, children's playgrounds or other areas of a specialist nature, including nature conservation areas
Linear Open Space Pedestrian visits	Variable Wherever possible	Canal towpaths, paths, disused railways and other routes that provide opportunities for informal recreation, including nature conservation. Often areas which are not fully accessible to the public but contribute to the enjoyment of the space.

The hierarchy includes both recreational open space and natural areas, though the latter have been strengthened by increasing use within the hierarchy of the statutory *Local Nature Reserve* and non-statutory *Site of Importance for Nature Conservation* designations.

The London Ecology Unit has overseen a comprehensive programme of habitat survey across London, and has published a series of reports and Ecology Handbooks for the Boroughs. An

initial Wildlife Habitat Survey, was conducted by the London Wildlife Trust under the auspices of the Greater London Council, covered sites above 1ha in size in outer London and 0.5ha in inner London, with a quality cut-off to exclude poor-quality sites.

More recently the survey methodology has been updated and consolidated by the LEU and much of the work of the initial survey has been repeated to smaller size thresholds and with no quality cut-off, thus increasing coverage. The methodology forms the planning basis for nature conservation in the capital and is included in the strategic guidance (RPG3) for London as part of the LEU's policies and criteria for evaluating nature conservation sites.

The most recent amendments to the survey methodology have incorporated the need, originally identified by LPAC, for comprehensive survey of open space in London. The survey is a modified form of English Nature Phase I Habitat Survey methodology, though in London all open spaces are surveyed and mapped individually.

The GLA then identifies sites of natural greenspace for protection in planning, according to their significance within the overall hierarchy. The levels in the hierarchy, developed by the LEU, are based upon the best candidate areas in a hierarchy of formal search areas. Then *Areas of Deficiency* are identified. These are defined as:

- areas more than 1 kilometre actual walking distance from accessible Metropolitan or Borough sites.

In this case the accessibility standard is applied taking into account points and routes of access. GIS having been found to be unsuitable for this, site visits, manual measurements and manual mapping of the results are required. This produces great accuracy but requires a level of staff resource that may not be available in other locations.

The advantage of this approach is that a consistent strategic overview is available across the entire city, including across borough boundaries. Detailed information can then be made available to the boroughs to inform local action in respect of identified areas of deficiency. The standard in use is a generous one and no account is taken of sites that do not reach the minimum standard on a borough search area, but a consistent, workable and well-accepted system has emerged, suitable to its context.

The prevailing view of those involved in this work in London is that any rigid application of the existing ANGSt model in the capital would be doomed to fail, because the nature of the urban landscape is such that some of its requirements would not be achievable and others are not sensitive to the actual distribution of need. However the key principles of measuring accessible natural greenspace provision in an urban area have been applied in London, and have produced a workable system, just with different parameters.

It must be recognised, however, that London- in this respect- is probably unique and the situation it has inherited from historical circumstances is not- and may not- be replicated in other urban areas. However, the practice is worth investigating as a potentially viable model to further.

5.4 Implementing ANGSt in Birmingham

Birmingham City Council implemented the ANGSt model as a component of its Nature Conservation Strategy, published in 1997. The strategy is rooted in the City's Unitary Development Plan and has status as Supplementary Planning Guidance, giving it weight within the development control system. It also refers to the wider *Black Country Nature Conservation Strategy*, encompassing Birmingham and four other authorities. The strategy articulates policy in the context of a strategic open space network and identified wildlife corridors, in addition to the designated nature conservation sites.

The City is aware that the density of its urban development makes achievement of the standard unrealistic, so commitment is aspirational rather than absolute. However, as a formal component of local planning policy the standards have the desirable effects of influencing decision-making and of strengthening the protection of natural greenspace against development. The standard is articulated in policy twenty-one of the strategy:

> *"The City Council will seek to ensure that where possible people have access to a variety of natural open spaces as follows:*
>
> *1 x 2ha site within 500m of people's homes*
> *1 x 20 ha site within 2km of people's homes*
> *1 x 100ha site within 5km of people's homes*
> *1 x 500ha site within 10km of people's homes"*

Note that the local access distance has been increased to 500m in this case (where ANGSt sets out 300m) and that there is no commitment to the provision of 2ha of Local Nature Reserve per thousand population, as required by ANGSt. The reason for this exclusion can be seen in policy twenty-two of the nature Conservation Strategy:

> *"The City will aim to increase Local Nature Reserve Provision by 10% to achieve 1ha per 27,458 people."*

So there is an aspiration to increase provision, but from a starting-point considerably below that proposed by the ANGSt model. In this case the level set out in the standard can be seen to have little relevance to the situation on the ground and this aspect of it has accordingly been omitted, though a commitment to a realistic progress target has been made.

In working to implement its standards, several issues came to the fore that were addressed through additions to the structure and priorities of the ANGSt model:

- in order to make the standard more relevant to the development -control process, criteria of greenspace quality were added so that the degree of protection afforded to sites could be realistically varied. The criteria are:
    - critical natural capital; Sites of Special Scientific Interest, Sites of Importance for Nature Conservation and Local Nature Reserves;
    - constant natural assets; Sites of Local Importance for Nature Conservation.

  These are specified within the local plan and are kept under review. All of these sites are considered to be *"Sites of Quality"* that meet the needs of the standard. Parts of

the city where people do not have access to any such site within 500m of their home are designated "*Wildlife Action Areas"*, within which action will be taken to identify land to enhance for nature conservation.

- The strategy notes that people tend to visit those sites within walking distance of home and states that: *"policies for improving access should focus most on local provision."*

The strategy also addresses the potential for increasing the nature conservation resource. In policy twenty, it is stated that:

> "*The City Council will, itself and in liaison with others, seek to expand the City's nature conservation resource through the creation of new wildlife habitats and natural features.*
>
> *This policy will be implemented by:*
>
> - *Preparing targeted habitat creation strategies for Wildlife Action Areas, sites of quality, areas of special habitat and the strategic open space network.*
> - *Preparing planning and development briefs requiring habitat creation or revealing of geological features on appropriate sites.*
> - *Implementing a nest box scheme to encourage people to put up bird and bat boxes."*

The strategy also acknowledges some of the limitations within which it operates, particularly concerning information deficiencies. Despite Phase 1 and 2 surveys having been carried out in the city, sites below 0.5 ha were excluded as were some types of land-use including parks, public open space, allotments, churchyards, school grounds and arable farm-land. However a number of policies are set out to progressively address these deficiencies and to conduct social research within the community on how natural greenspace is regarded and the factors that encourage or limit the use of sites.

Birmingham's experience has been positive, but has also highlighted some important issues. in particular a number of developments would be considered desirable:

- the inclusion within the standards of social and quality criteria as, for instance, natural green space can be perceived as neglected and unwelcoming if not properly managed;
- a need to move towards a single unified system for the classification of open space to produce a more sophisticated planning tool than the 'Six Acre Standard', which incorporates ANGSt principles and covers all open space in a clear and logical way;
- the need for effective information management and the development of sophisticated GIS-based analysis tools. This arises from organisational difficulties whereby departments within the City Council hold data of which other departments are unaware, leading to duplication of effort and inefficiency.

In Birmingham the implementation of accessible natural greenspace standards has been a positive experience, providing demonstrable benefits in terms of the enhanced protection of the city's natural greenspace in the face of development pressure and of the identification of

mechanisms for enhancing provision where possible. Where difficulties have arisen it has been possible to design effective local solutions and to begin to see ways in which the system might be improved still further in the future.

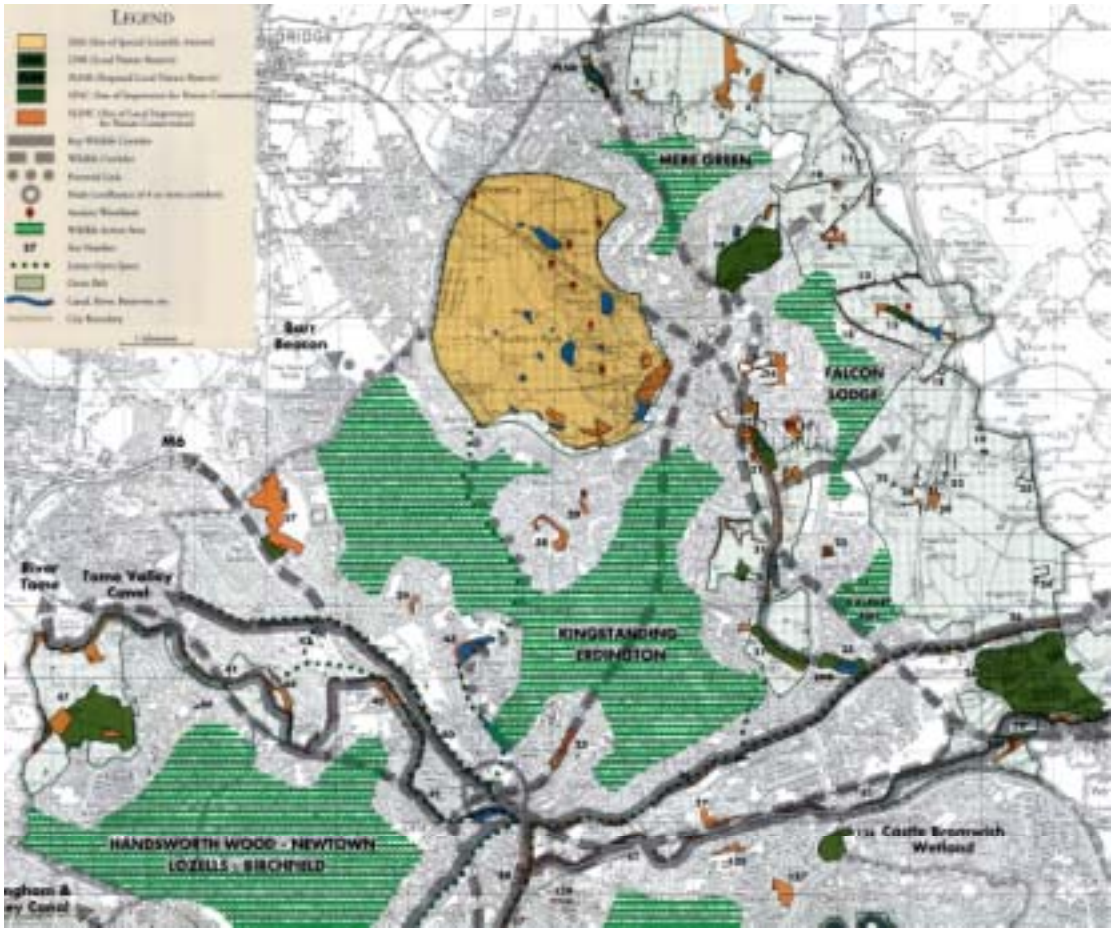


Figure 5.2 Nature Conservation Strategy for Birmingham

'Wildlife Action Areas' are hatched green to delimit areas of deficiency.

5.5 The ANGSt model in Bracknell Forest's parks and open spaces strategy

Bracknell Forest Borough Council, a new town authority, is seeking to develop a comprehensive Parks and Open Spaces Strategy in recognition of the importance of parks and open spaces to quality of life and the fulfilment of environmental and social objectives. The borough considers that providing a considered strategic direction will help the planning of appropriate provision, maximise opportunities for funding and lead to more effective deployment of resources.

The development of this strategy document is based on the long-standing Bracknell Forest Open Space Standard, which is set out in the local plan and requires that existing open space of public value is protected and that a level of provision of open space at 4.3ha per 1000 population is required in new developments. A key principle of the strategy is that *"Coherent*

and balanced provision will be sought". As a new town, this standard has particular resonance in the urban area of Bracknell itself.

The draft document, currently completing its consultation phase, sets out policy aims and objectives, key definitions, strategic principles and a hierarchy of open space including, as a separate category, *'Accessible Natural Space'* defined and measured according to the ANGSt standard. The strategy includes standards for outdoor sports and play space in addition to those for natural space. Although no map is presented showing areas deficient in accessible natural space, each category of the size and distance criteria is analysed in the text and deficiencies are identified. The larger sites are named in this analysis and a full schedule and map of the sites covered (including many owned/managed by bodies other than the local authority) is provided.

As the strategy document takes a strategic and integrated approach to open space issues within the borough, it is able to make simple and clear statements about the direction of open space policy. These include the need for:

- appropriate policy support within the local development plan for the aims and objectives of the strategy;
- a strategic 'Vision' for target levels and distribution of provision of differently functional greenspace and the levels of facilities and staffing to be provided;
- increased partnership working with a number of named organisations;
- production of development briefs that include open space issues for all development sites;
- preparation of management plans for all sites;
- action planning for the resolution of serious problems (including those that might affect the accessibility of a site);
- open space needs assessments to be conducted in each area of the borough.

The distinction between the nature of sites is achieved in a very simple way. Each site listed is assigned a value on a five-point scale showing the balance between its value for amenity and naturalistic attributes. This clearly distinguishes between playing fields and nature reserves, but also allows for multifunctional sites to be distinguished.

The assessment of sites was conducted according to a range of defined criteria and the judgement of a professional assessor. This had the benefit of producing useful management information for a wide spatial area with relative speed, and has allowed the strategy document to be developed more quickly than might otherwise have been the case. However the subjective nature of the process and the lack of hard survey data might render this approach less useful for development control purposes as it may prove insufficiently robust in a planning enquiry environment.

5.6 Brentwood's progressive implementation of the ANGSt model

Brentwood Borough's boundaries border those of Greater London, and it can be categorised as a wealthy commuter-belt community. It has one major urban area and a high proportion of

rural countryside, and receives large numbers of visits from within the London area. The borough has for many years used the 'Six Acre Standard' to gauge its provision of amenity open space, but has had no such means of assessing its provision of natural greenspace.

However the borough has significant provision of natural space and has been able to recently acquire significant additional areas through planning gain. These additional sites will greatly increase the amount of protected land in the borough, but the additional management requirements will place further demands on already limited resources. In these circumstances the borough has decided that it needs to plan and manage its natural greenspaces in a more systematic way, and it has identified the English Nature ANGSt model as a suitable tool for this purpose.

However in making this choice, the authority has recognised that it has limited resources to properly implement the model, as data collection and analysis requirements might be very great. A decision has therefore been taken to implement the standards progressively, by committing initially only to the standards that refer specifically to Local Nature Reserves, as such sites are either already identified and mapped or can be identified according to the clear criteria provided by English Nature. Therefore a commitment to this has been included in the borough's draft Cultural Strategy, with the intention in due course to expand implementation to the full scope of the standard.

5.7 Summary

The aim of this chapter has been to show how a number of local authorities, dealing with varied local circumstances and priorities, have worked positively with the principles set out in the ANGSt model to produce a meaningful strategic tool for natural greenspace planning. Birmingham has practical experience of standards in operation, and has learned lessons in how best to apply them within its local context.

The advantages and limitations of simple GIS mapping based on a limited dataset could be seen in the case of Manchester, while London demonstrates that a strategic spatial approach can provides a level of consistency in approach and results, while illustrating that complex, manual mapping of areas of deficiency may require a level of resource that is not practical in many other jurisdictions.

The example of Bracknell Forest shows that a strategic functional approach to greenspace is achievable by means of the Parks and Open Spaces Strategy, while that of Brentwood demonstrates that a staged approach to the implementation of the standard through other policy instruments is also possible.

In the final chapter, the various themes and issues identified in this chapter and throughout this report will be brought together, a range of conclusions made and recommendations put forward as a basis for further action.

6. The way forward

6.1 Introduction

The review of English Nature's Accessible Natural Greenspace Standards (ANGSt) was based on a literature review, and a wide range of interviews both with Local Authorities and expert organisations. A stratified random sampling approach was used to select local authorities representative for the range of urban situations and with a geographic spread across England. The results show a high degree convergence regarding the main greenspace related issues in general, and more specifically as regards the ANGSt model.

The original scope was rather to check the functionality of the ANGSt model than to question its fundamental basis but, given the current context of policy development and a the range of recent work covered in this review, it seems useful to discuss the standards approach more generally, in order to better understand its potentials and limitations.

The standard concepts is most effective when the object of standardisation is one-dimensional and can be easily measured. However, the concept has also shown its limitations for environmental planning, namely that:

a. Environmental standards are minimum standards designed to avoid health hazards whereas the bigger question of quality of life remains unanswered ('safe minimum standards', Ciriacy-Wantrup, 1967).

b. Multi-factorial quality dimensions are difficult to address with the setting of standards.

c. Standards are focussed on outcomes rather than at initiating processes. Once set they are difficult to change and to adapt to new requirements.

d. Standards are an 'end-of-pipe approach' which transfers problems from one medium to another and/ or from one place to another, rather than to provide systematic solutions.

Not surprisingly, the standards concept has been mainly applied in greenspace planning to provide playing fields and play areas, thus, open space dedications for a clearly defined function. The National Playing Fields Association's '*Six Acre Standard*' is a prominent example in this respect. The literature review showed that this standard is strongly criticised, in particular because its focus is very narrow and it takes a purely quantitative approach, whereas the quality of open space and its wider dimensions (a playing field can also provide visual amenity and habitats, e.g. hedgerows at the borders) are ignored.

A second reason for the declining interest in the spatial standards approach can be seen in the emphasis now being placed on community based, bottom-up approaches to planning instead of prescriptive top-down planning, of which standards are considered to be an essential component. Linked to this argument, there was a shift in opinion to encourage processes towards sustainable development rather than set certain end-points. The Environmental Auditing scheme and the recently introduced Best Value exercise for Local Authorities can be taken as examples of this approach.

Does it make sense then to pursue the ANGSt model in the light of these arguments? The answer from this research study is **"yes"** if certain conditions are met and the ANGSt model is made operational to facilitate its use by Local Authorities.

The review of recent literature ANGSt showed further scientific evidence for the need to provide greenspace in urban areas from a social, environmental/ ecological and economic perspective. In particular studies on the needs of urban dwellers to have access to greenspace and experience nature in the city supported the size and distance criteria suggested by the ANGSt model. However, in particular landscape ecology but also findings from climatic studies stress the need to adopt a holistic perspective on the urban landscape and its greenspace. Therefore, accessible natural greenspace should not be seen in isolation but as part of the overall greenspace resource, and comprehensive strategies for the assessment, planning and management of greenspace are needed to achieve more sustainable patterns of urban development. The establishment of multi-functional greenways serving both recreational and environmental/ ecological purposes, comprehensive greenstructure planning as introduced in Scandinavia, and urban forestry are concepts to meet these requirements and should be further promoted in a UK context.

The strongest support for the ANGSt model comes from the practitioners in the field of open space planning. While many local authorities were not aware of the existence of the ANGSt model, many had worked with the NPFA's *'Six Acres Standard'* and expressed a wish to be supported with a complementary standard for the protection and creation of accessible natural greenspace. According to interviewees from Local Authorities, these standards should be introduced on a national level and referred to in Planning Policy Guidance (such as PPG17 on open space, PPG9 on nature conservation and PPG3 on housing) to be effective. This view is understandable given the relatively weak position of open space planners within Local Authorities. However, the point was also made that ANGSt should be considered rather as an approach for benchmarking the performance of the Local Authority than as a rigid standard in a stricter sense. The standards should allow to account for local variation to reflect differences between urban areas as well as differences between neighbourhoods within urban areas. It was also mentioned that there was a need for a unified approach to greenspace standards to avoid overlap and conflicts between different standards.

The response of the Local Authorities showed that there is a clear need for standards. While the priority of English Nature is for ANGSt to ensure adequate provision, rather than to drive the additional protection of sites from development *per se*, one of the implications of implementing ANGSt is that a better quality of information is available for the setting of development control priorities, thus providing a firmer justification for the protection of sites of high quality or those of particular importance to communities. Experts working with the ANGSt model or similar standards approaches have confirmed that it was very helpful in planning control. Therefore, it can be concluded that the ANGSt approach should be further promoted whilst the critique of the standards approach should be reflected in the further development and application of the ANGSt model.

- Standards should be supplemented with other means of assessing demand and supply.
- Standards should be based on scientific evidence and clearly relate to the performance of open space (e.g. reducing air temperatures, providing habitat for wildlife).
- Standards should vary to account for local variations such as urban types (e.g.

different standards for large metropolitan areas, and small market towns), and differences between neighbourhoods.

- Standards for open space need to be placed into the context of open space strategies which are multi-departmental.

The *Urban White Paper*, draft *PPG17* and Urban Green Space Task Force *Interim Report* gave disappointingly scant references to nature conservation and ecology. Nevertheless the Government is demonstrating a commitment to a new urban agenda in which urban greenspaces are a major component, and to re-invigorating local government. Therefore, it seems timely to promote the adoption of ANGSt. The potential to deliver ANGSt through the statutory planning is demonstrated in the case study of Birmingham, where standards similar to ANGSt have been adopted as supplementary planning guidance, and are successfully used in planning control. In addition, there exist a number of external strategic approaches where ANGSt could be plugged in such as Local Cultural Strategies, Local Biodiversity Action Plans and LA21.

Finally, throughout the study, it became evident that the lack of appropriate management of existing greenspaces is a key issue. Therefore, in many established towns and cites, deficiencies are more likely to be corrected by greater attention to the quality of existing greenspaces and improving access to them, rather than by attempting to increase the provision of accessible natural greenspace by providing new sites.

These arguments show that accessible natural greenspace standards can be considered as an important instrument for greenspace planning, and should be further promoted. However, their wider use critically depends on:

- Remedy of deficits currently impeding the wider adoption of the ANGSt model: a number of improvements have to be made to remove **methodological and technical barriers**. The development of a toolkit will be instrumental to achieve this goal.
- Integrating ANGSt into wider strategic approaches to greenspace planning and management: ANGSt should become part of comprehensive strategies for the planning and management of multifunctional urban greenspaces. These need to be clearly related to planning and policies. Recommendations are made to enhance the **institutional capacity** for wider adoption of the ANGSt model.

The following paragraphs will further detail these general conclusions to make:

5. Specific recommendations to promote the ANGSt model.

6. Wider recommendations to further the implementation of ANGSt as part of comprehensive open strategies.

6.2 Recommendations to promote the ANGSt model

Local authorities, experts and the literature review revealed a number of **methodological and technical barriers** which have to be overcome to further the wider use of the ANGSt model. The main difficulties with the use of the ANGSt model were seen in:

- problematic definitions of 'natural' and 'accessible';
- difficulty of mapping accessibility effectively;
- lack of qualitative criteria;
- information deficit;
- lack of implementation guidance;
- unsuitability in extreme urban landscapes.

These difficulties have to be addressed and practical solutions need to be provided to enhance the wider application of the ANGSt model.

The way forward will be to provide Local Authorities with a decision support system to guide through the whole process of mapping greenspace provision, identify natural greenspace, assess accessibility, map areas of deficiency. Moreover the decision support system should give examples of good practice to demonstrate how the ANGSt approach can be effectively implemented.

The decision support system needs to:

- Provide clear, operational definitions of 'natural' and 'accessible', and develop a typology of urban greenspace.

The definitions of natural and accessible given in the original publications (Box and Harrison 1993: Harrison *et al.* 1995) are difficult to apply in an urban context and need clarification to become operational. The main problem with the definition was that it would discourage the active creation of natural greenspace and adopting more nature friendly management regimes in existing ones. Basing the definition of naturalness on the predominance of natural processes rather than on site history would probably be more appropriate. However, replacing one definition by another would not solve the problem of how to interpret the definitions in practice.

Instead, it is recommended to take a more pragmatic approach which is based on an open space typology and criteria to assess whether they have to be considered as 'natural'. Habitat surveys have been undertaken since many years in urban areas and methods such as the Phase I survey are well established. The example of the manual for the 'Open space and habitat survey for Greater London' shows how this method can be adopted for the mapping of greenspace in urban areas. The manual provides a definition and verbal description of types of open space. (GLA 2001) This together with a documentation of examples from a pilot survey could provide clear guidelines for the mapping of open or greenspace. Quality criteria

are included which enable to assess the conservation value of the sites. However these require expertise for their application, and this might restrict their wider usefulness. The issue of open space typologies has also been explored from several other perspectives recently, and other potential approaches have been proposed separately by the Urban Green Space Task Force (2000), Kit Campbell Associates (2001), Dunnett *et al* (2001) and the University of Newcastle (2001).

Most importantly, the manual must provide clear criteria which greenspace should be included. The original definition used by the ANGSt model placed overly emphasis on 'pure' natural areas whereas other, artificially created greenspace was excluded. However, designated greenspaces such as parks and cemeteries, can have significant amounts of natural areas with great significance for biodiversity and nature experience, for instance groups of planted trees with undergrowth, flower meadows, etc. It is recommended to include these greenspaces in the ANGSt model. This would also encourage that parks and other greenspace which currently do not meet the criteria would be managed in parts in a more nature friendly way.

Adopting such an approach seems the most realistic way to relieve the deficits of accessible natural greenspace in already densely built-up areas. To put this into practice, a mapping manual has to provide pointers if and when a park can be considered as natural greenspace. Verbal descriptions such as 'contains to a significant extent stands of old trees with understory shrubs', 'larger areas of extensively managed meadows' could be given, and examples should be added as reference. The manual of the Phase I habitat survey provides descriptors to identify important habitat features within parks and other greenspace.

In a similar way, definitions for farmland on the urban fringe could be given. Farmland can provide nature experience when it is accessible and is rich in habitat features such as old hedgerows and rows of trees. Protecting and re-introducing these elements into the countryside around towns should be rewarded by the ANGSt model. However, it does not make sense to measure the area of the single feature such as a hedgerow whilst the density of these features in the landscape determines its overall quality. Therefore verbal descriptions such as 'farmland rich in habitat features and with good access' could be given, and the areas would be mapped as a whole rather than the single habitats.

- Define and map accessibility effectively.

An aid is also needed to define and map accessibility. Simply drawing a line in a certain distance around greenspace does not reflect the reality as access depends on the existing ways to greenspaces, barriers on the way, existence of entrances, perceived health and safety risks. While neighbourhood greenspaces are mostly visited on foot, accessibility by public transport is a particularly important issue on the higher levels of the hierarchy.

Access also differs between gender and social and ethnic groups, however, this would be probably difficult to include in the model. To get data on access to and use of parks, user surveys would be needed, as carried out by the City of Birmingham. While it would be desirable to have these data, they are part of the wider issue of greenspace planning and management. For the purposes of the ANGSt model these complex factors are perhaps best covered by a recommendation for the adoption of a good practice commitment to work towards the enhancement of sites for access for all.

For the sake of simplicity, it is recommended to assess access mainly on basis of the more easy to map physical attributes. The case studies from London and Manchester show how can be done in practice. In London, distance from the greenspace was measured from existing entrances to the greenspace along streets or paths. Major roads were considered as obstacles. As a result, areas of deficiency can be mapped to show where there is currently a lack of accessible natural greenspace. While it needs to be acknowledged that real access can differ, these maps provide a good overview information and are a particularly strong argument for provision of greenspace on the levels of strategic planning.

GIS programmes offer great potential to map accessibility. These programmes include functionalities to measure distances from greenspaces along streets automatically. For instance, electronic Landline data of the street pattern can be used as base maps for this purpose. However, obstacles such as big roads need to be defined and identified. In London, a threshold value of passing cars per day was used to identify roads which are barriers and should be excluded as possible pathways to greenspaces.

- Include qualitative criteria.

The ANGSt model already includes qualitative dimensions of greenspace. Naturalness and accessibility are the quality criteria applied to identify those areas which go into the equation. These criteria still do not assess the actual condition of the greenspace. A calcareous grassland would be considered as a natural area but it still can be in a good or bad condition depending on management and other factors. Yet, this information is indispensable for appropriate management of the greenspace. Recording this information needs to be part of a wider approach to comprehensive greenspace planning and management.

- Develop an information basis and systems on greenspace.

The widespread lack of reliable information on greenspace was considered as one of the major obstacles to implement the ANGSt model, and more generally for greenspace planning and management. The interviews with the Local Authorities brought some sobering results as to the current information base. The implementation of the ANGSt model and any forward looking greenspace planning and management critically depends on the existence of data on:

- Quantitative provision of greenspace by categories.
- Quality/ condition of greenspace.
- Functions & services of greenspace: biodiversity, environmental services, recreational use, landscape character.
- Access to greenspace.
- Ownership status.
- Resources available

Sometimes information already exists but is not known to those in charge of greenspace because it is collected by other organisations, e.g. Wildlife Trusts and Biological Records Centres (linked with other organisations through the National Biodiversity Network). The survey also showed that there can be even a lack of information exchange between the departments of a local authority. The way forward will be to establish a geographic

information system on greenspace which is accessible to all departments and also to the public (excluding sensible information on ownership and resources) via the internet.

The survey also showed that Geographic Information Systems are becoming widespread in Local Authorities but their use for greenspace planning and management was still very limited. Therefore, some local authorities suggested that the ANGSt toolkit should be designed so that it could be used without a GIS.

While this argument is acknowledged, it is recommended to make use in the toolkit of GIS and important sources of information in electronic format such as Cities Revealed data to demonstrate how these can be used effectively for the implementation of the ANGSt model. The Manchester case study gives an example how a GIS can be applied to assess areas of deficiency. Taking this approach would not exclude the application of the ANGSt model without having access to a GIS but it would greatly facilitate its implementation. The toolkit should provide clear guidelines how to develop and apply a GIS for this purpose. The toolkit should be generic as there is a variety of software for Geographical Information Systems in use.

- Implementation guidance.

A simple staged pathway approach is suggested to implement ANGSt:

Mapping the (natural) greenspace resource would be the first step in this process. The assessment of accessibility should be done separately as it will be important for the implementation of ANGSt to know where greenspace is which is currently not accessible. The third step comprises the identification of areas of deficiency. Accessible Natural Greenspace should be designated. The case studies of London and Birmingham show different approaches how to achieve this goal. To improve the situation in areas of deficiency, in a first step, existing greenspace would be assessed:

a) Can existing natural greenspace be made accessible?

b) Can accessible greenspace which does not meet the criteria of 'natural greenspace' be changed in form or improved in quality through changes in design and/or management?

c) Is there scope for creating new accessible natural greenspace, e.g. through section 106 agreements?

Finally, the implementation should encompass effective communication about existing accessible natural greenspace, on the one hand, and areas of deficiencies on the other.

The toolkit should guide the implementation process through each of these steps and give advice on best practice, from planning the survey to identifying funds for the creation of new natural greenspace.

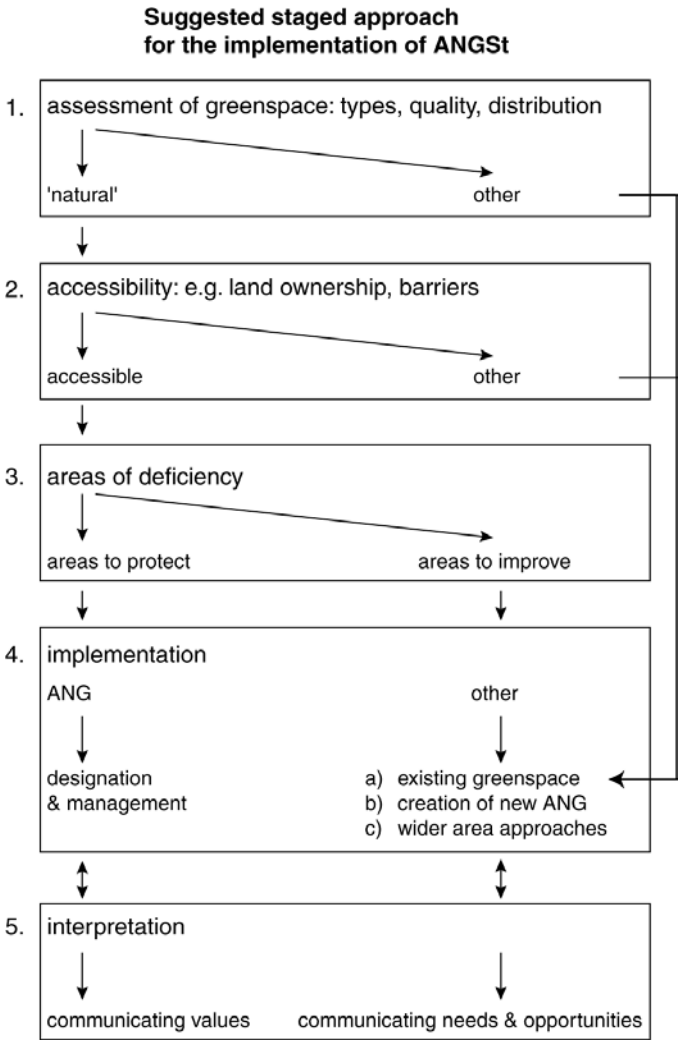


Figure 6.1 Outline of a staged approach for the implementation of ANGSt

6.3 Recommendations to integrate ANGSt into a single framework for greenspace planning and management

As a result from the study, we argue that there is a particular need to place ANGSt into the context of:

- Strategic approaches to greenspace planning and management;

and to develop efficient mechanisms for

- implementation: planning policies and resources.

6.3.1 Comprehensive greenspace strategies

In particular landscape ecology suggests that a holistic perspective needs to be adopted for the comprehensive planning and management of urban greenspace to improve environmental conditions and safeguard urban biodiversity. Natural greenspace in urban areas is surrounded

by and interacts with the matrix of urban land uses. These can often contain larger amounts of greenspace, for instance in gardens, than areas of natural greenspace. Depending on their amount, structure and management, they can have great importance for recreation, and environmental quality.

While the ANGSt model proposes standards for the provision of accessible natural greenspace, it does not yet reflect on the importance of green networks both to facilitate access to and movement within urban greenspace for recreation as well as to enhance connectivity for wildlife. Moreover, improving the quality of streetscapes and other public open space is critical to promote access to greenspace and the quality of the neighbourhoods. This is particularly important in densely built-up areas where plazas and streets may be the only areas available to improve green space provision. Research on parks use showed that the quality of the access ways to public greenspace influences the frequency of parks use. Well designed streetscapes can therefore contribute to the achieve ANGSt.

In low density residential with large private gardens, infill development is often a major threat to the greenspace resource with implications for the environmental quality of the whole neighbourhood.

These concerns go beyond the direct scope of the ANGSt model. They show that it is important to look at ANG not in isolation but to place them into the context of wider approaches to greenspace planning and management both to preserve their quality and that of the surrounding neighbourhood.

6.3.2 Implementation: planning policies and resources

The study highlights the need to develop better mechanisms for accessible natural greenspace planning and management as well as to improve the financial resource base.

Instruments:

Local Authorities commented that national planning policies (PPGs) should make it a requirement to implement the ANGSt model. There was also seen a need for integration of different greenspace standards such as the NPFA's '*Six Acre Standard*', standards for the provision of play areas and ANGSt. However, there is a certain conflict between the desire to be supported by standards on a national level. Moreover, care should be taken that the ANGSt model will not be applied in a mechanistic way such as the NPFA's 'Six Acre Standard'.

It is, therefore, recommended to consider whether reference should be made to the development of ANG in national policies in a general form, while the definition of the standards should be left to the Local Authorities as part of wider greenspace strategies.

Whilst it would be desirable to strengthen the role of greenspace planning and management via reference in PPGs and RPGs, the policy review and the survey of Local Authorities revealed a number of further opportunities to implement ANGSt. Best Value, Cultural Strategies, Local Biodiversity Action Plans and Nature Conservation Strategies have been, or can be, used to achieve this goal. The case studies show some of the examples.

It is recommended that English Nature takes the lead to establish a network between practitioners and expert organisations to further the exchange on good practice on the implementation of ANGSt. In addition, information should be disseminated via the internet and in workshops. The activities of the Countryside Agency to promote landscape character assessment can serve as an example how this can be achieved.

Funding:

The improvement of greenspace provision and quality critically depends on the allocation of appropriate levels of funding. Section 106 agreements are a promising instrument to generate funds for the creation of greenspace, however, a problem is that commuted sums for their management are short-term and are currently restricted to use in proximity to development sites, rather than to address local strategic priorities.

While Local Authorities will have mainly to commit themselves to this task, external sources of funding should also be considered. It would go beyond the scope of this study to provide detailed information of the different mechanisms for funding of greenspace planning and management, their advantages and disadvantages.

It would probably also go beyond the scope of a tool-kit to provide solutions. In particular as solutions have to be tailored to the specific needs of the Local Authorities. Establishing a network between Local Authorities and expert organisations would be helpful to exchange information on funding mechanisms and how these work in practice.

What can English Nature do?

- Development of a toolkit/ and a staged pathway approach to implement the ANGSt model.
- Establishing a network between key organisations such as NPFA, ILAM, Urban Greenspace Task Force, etc. and Local Authorities.
- More effective promotion of the model through information dissemination and in its advisory role within the planning system.
- Advocate inclusion within official guidance such as Planning Policy Guidance Notes.
- Instigate and actively support moves towards an integrated system for greenspace planning.

7. References

ASHCROFT, P., 2002. *Case Study: Walking the Way to Health Initiative*. Summary of papers of the National Conference Greenspace & healthy living, 14 May 2002, Manchester. Wolverhampton: National Urban Forestry Unit (NUFU).

AHERN, J., 1995. Greenways as a planning strategy. *Landscape and Urban Planning,* 33: 131-155.

ANTROP, M., 2000. Changing patterns in the urbanized countryside of Western Europe. *Landscape Ecology,* 15: 257-270.

ARTS G.H.P., VAN BUUREN M., JONGMAN R.H.G., NOWICKI P., WASCHER D., & HOEK I.H.S. (Eds.), 1995. Ecological networks. *Landschap,* 95 (3*), Special Issue.*

BARKER, G., 1997. A framework for the future: green networks with multiple uses in and around towns and cities. Peterborough: *English Nature Research Reports*, No. 256.

BECKETT, K.P., FREER-SMITH, P.H., & TAYLOR, G., 1998. Urban woodlands: their role in reducing the effects of particulate pollution. *Environmental Pollution,* 99: 347 – 360.

BERGEN-JENSEN, M., PERSSON, B., GULDAGER, S., REEH,U., & NILSSON, K., 2000. Green structure and sustainability - developing a tool for local planning. *Landscape and Urban Planning,* 52: 117-133.

BIRD, W., 2002. *Exercise and fitness*. Summary of papers of the National Conference Greenspace & healthy living, 14 May 2002, Manchester. Wolverhampton: National Urban Forestry Unit (NUFU).

BIRMINGHAM CITY COUNCIL & LAND CARE ASSOCIATES LTD., 1997. *Nature Conservation Strategy for Birmingham*. Birmingham City Council.

BOLITZER, B., & NETUSIL, N.R., 2000. The impact of open spaces on property values in Portland, Oregon. *Journal of Environmental Management,* 59: 185–193.

BOX, J. & HARRISON, C., 1993. Natural spaces in urban places. *Town & Country Planning,* 62(9): 231-235.

BOX, J., COSSONS, V., & McKELVEY, J., 2001. Sustainability, biodiversity and land use planning. *Town & Country Planning,* July/ August 2001: 210 - 212.

BOX, J., & HARRISON, C., 1993. Natural spaces in urban places. *Town & Country Planning,* 62(9): 231-235.

BRIFFETT, C., 2001. Is managed recreational use compatible with effective habitat and wildlife occurrence in urban open space corridor systems? *Landscape Research,* 26(2): 137-163.

BURGESS, J., HARRISON, C.M., & LIMB, M., 1988. People, parks and the urban green: a study of popular meanings and values for open spaces in the city. *Urban Studies,* 25: 455-473.

BUTTERFIELD, B., & RELF, D., 1992; National survey of attitude towards plants and gardening. *In:* RELF, D. (ed.) *The Role of Horticulture in Human Well Being and Social Development*: *A National Symposium*. Portland, Oregon: Timber Press.

BROWNE, A. 1992. The role of nature in the promotion of well being in the elderly. *In*: RELF, D. (ed.) *The Role of Horticulture in Human Well Being and Social Development: A National Symposium*. Portland, Oregon: Timber Press.

CAMPBELL, K., 2001. Open season. *Leisure Manager,* October 2001.

CIRIACY-WANTRUP, 1967. *Natural resources : quality and quantity : papers presented before a faculty*. Berkeley: University of California Press; Cambridge: Cambridge University Press.

CLIVE PAYNE CONSULTANCY, 2001. *Bracknell Forest Borough Council Parks and Open Spaces Strategy*, consultation draft. Bracknell: Bracknell Forest Borough Council.

CLTS (CENTRE FOR LEISURE AND TOURISM STUDIES, UNIVERSITY OF NORTH LONDON), 1993. *Market Research Methodology Study for the Royal Parks*. London: University of North London Press.

CLTS (CENTRE FOR LEISURE AND TOURISM STUDIES, UNIVERSITY OF NORTH LONDON), 1995. *Market Research Survey of People Using the Royal Parks: Annual Report 1995*. London: University of North London Press.

COLES, R.W., & BUSSEY, S.C., 2000. Urban forest landscapes in the UK -progressing the social agenda. *Landscape and Urban Planning,* 52: 181-188.

COLLINGE, S.K., 1996. Ecological consequences of habitat fragmentation: implications for landscape architecture and planning. *Landscape and Urban Planning,* 36: 59-77.

COMEDIA & DEMOS, 1995. *Park Life: Urban Parks and Social Renewal*. Stroud, Gloucester.

COOK, E.A., 1991. Urban landscape networks, an ecological planning framework. *Landscape Research,* 16: 5-17.

COOK, E.A., 2000. *Ecological Network in Urban Landscape*. The Netherlands: Wageningen University Press, 201 pp.

COST Action C11. *Greenstructure and Urban Planning*, http://www.map21ltd.co.uk/COSTC11

COUSINS, S.H., 1982. Species size distributions of birds and snails in an urban area. *In*: BORNKAMM, R., LEE, J.A. SEAWARD, M.R.D. (eds.), *Urban Ecology*. The second European ecological symposium. Oxford: Blackwell Scientific Publications 99-109.

CURSON, T., EVANS, G., BOHRER, J., 1995. *Market Research Survey of People Using the Royal Parks: Annual Report 1994.* London: University of North London Press.

DAVIS, B.N.K., 1978. Urbanisation and the diversity of insects. *In:* MOUND, L.A. & WALOFF, A. (eds.) *Diversity of Insect Faunas.* Symposia of the Royal Entomological Society Number 9. Oxford: Blackwell Scientific Publications, 126-138.

DAWSON, D., 1994. Are habitat corridors conduits for animals and plants in a fragmented landscape? A review of the scientific evidence. Peterborough: *English Nature Research Reports*, No. 94.

DETR (DEPARTMENT FOR ENVIRONMENT, TRANSPORT AND THE REGIONS), 1998. *Modern Local Government: In Touch with the People* London: DETR.

DETR (DEPARTMENT FOR ENVIRONMENT, TRANSPORT AND THE REGIONS),1999. *A Better Quality of Life: A Strategy for Sustainable Development for the UK.* London: DETR.

DETR (DEPARTMENT FOR ENVIRONMENT, TRANSPORT AND THE REGIONS), 2000. *Urban White Paper*. London: DETR.

DETR (DEPARTMENT FOR ENVIRONMENT, TRANSPORT AND THE REGIONS), 2001. *Draft Revised PPG17: Sport, Open Space & Recreation.*

DETR (DEPARTMENT FOR ENVIRONMENT, TRANSPORT AND THE REGIONS), 2000. *Preparing Community Strategies: Draft Guidance to Local Authorities*. London: DETR.

DE VRIES, S., VERHEIJ, R.A. & GROENEWEGEN, P.P., 2000. Nature and health: an exploratory investigation of the relationship between health and green space in the living environment ('Natuur en gezondheid een verkennend onderzoek naar de relatie tussen volksgezondheid en groen in de leefomgeving'). *Mens en maatschappij*, 75(4): 320-339.

DICKMAN, C.R. 1987. Habitat fragmentation and vertebrate species richness in an urban environment, *Journal of Applied Ecology,* 24: 337-351.

DoE, (DEPARTMENT OF THE ENVIRONMENT),1991. *PPG17: Sport & Recreation*. London: HMSO.

DOLPHIN, G., 2000. *Quality street scapes 2000.* The Fifth Annual Conference on Enhancing the Design & Use of Urban Streets & Public Spaces, at Kensington Town Hall Conference Centre, London, 21st March 2000.

DOUGLAS, I. & BOX, J., 2000. *The changing relationship between cities and Biosphere Reserves.* A report prepared for the Urban Forum of the United Kingdom Man and Biosphere Committee, 31 pp.

DUHME, F. & PAULEIT, S., 1992. Naturschutzprogramm für München. Landschaftsökologisches Rahmenkonzept. *Geographische Rundschau*, 44 (10): 554-561 (in German)

DUNNETT, N., SWANWICK, C. & WOOLLEY, H., 2001. *DTLR Research Project: Improving Urban Parks, Play Areas and Green Spaces*. Interim Report on Literature Review. Unpubl. Draft. Sheffield: University of Sheffield, Department of Landscape.

EEA (EUROPEAN ENVIRONMENT AGENCY), 1999. *Environment in the European Union at the turn of the century*. Download from:http://themes.eea.eu.int/toc.php?toc=38091.

ELIASSON, I., 2000. The use of climate knowledge in urban planning. *Landscape and Urban Planning,* 48: 31-44.

ENGLISH NATURE, 1996. *A Space for Nature*. Peterborough: English Nature.

FABOS, J.GY. & AHERN J.(eds.), 1996. *Greenways: the Beginning of an International Movement*. Amsterdam: Elsevier, 491 pp.

FERGUSON, B., 1994. The Concept of Landscape Health. *Journal of Environmental Management,* 40: 129-137.

FLORES, A., PICKETT, S.T.A., ZIPPERER, W.C, POUYAT, R.V. & PIRANI, R., 1998. Adopting a modern ecological view of the metropolitan landscape: the case of a green space system for the New York City region. *Landscape and Urban Planning,* 39: 205-308.

FOLCH, R., 1996. Biodiversity in urban and peri-urban zones. *In*. DI CASTRI, F. & YOUNÈS, T. (eds.) *Biodiversity, Science and Development: Towards a New Partnership*. CAB International, pp. 539-542.

FORREST, M., KONIJNENDIJK, C.C. & RANDRUP T.B. (Eds.) *Research and development in urban forestry in Europe*. Luxembourg: Office of Official Publications of the European Communities.

FREER-SMITH P.H. & BROADMEADOW, M.S.J., 1996. *Urban Woodland and the Benefits for Local Air Quality*. Farnham: Arboriculture Advisory and Information Service Research Note.

FORREST, M., KONIJNENDIJK, C.C. & RANDRUP T.B. (Eds.), 1999. *Research and development in urban forestry in Europe*. Luxembourg: Office of Official Publications of the European Communities.

.

GLA (GREATER LONDON AUTHORITY), 2001a. *Guidance on Producing Open Space Strategies*. London, 4pp.

GLA (GREATER LONDON AUTHORITY), 2001b. *Open space and habitat survey for Greater London*, May 2001. London, 19 pp.

GLA (GREATER LONDON AUTHORITY, LONDON ASSEMBLY), GREEN SPACES INVESTIGATIVE COMMITTEE, 2001b. *Scrutiny of Green Spaces in London*. November 2001, London, 71 pp.

GRAHN, P., 1992. Landscapes in our minds: people's choice of creative places in towns. *Landscape research,* 16: 11-19.

GRAHN, P., 2001. *Green spaces: distance, qualities and uses*. Presentation given at COST C11 *Greenstructure and Urban Planning* meeting, Breda, The Netherlands, November 19, 2001.

HARDING, S., 2000; Towards a renaissance in urban parks. *Cultural Trends,* 35:1-26, London: Policy Studies Institute.

HARRISON, C., BURGESS, J., MILLWARD, A. & DAWE, G., 1995; Accessible natural greenspace in towns and cities: A review of appropriate size and distance criteria. Peterborough: *English Nature Research Reports,* No.153.

HENWOOD, K., 2001. *Exploring linkages between the environment and health: is there a role for environmental and countryside agencies in promoting benefits to health*? A Report for the Forestry Commission, University of East Anglia, Norwich.

HOSTETLER, M., 1999. Scale, birds, and human decisions: a potential for integrative research in urban ecosystems. *Landscape and Urban Planning,* 45: 15-19.

HÖRNSTEIN, L. & BREDMAN, P., 2000. On the distance to recreational forests in Sweden. *Landscape and Urban Planning,* 51: 1-10.

HOUSE OF COMMONS ENVIRONMENT SUB-COMMITTEE, 1999. *Inquiry into Town and Country Parks*. London: HMSO.

JÖRGENSEN, A., 2001. *Why is it important to encourage nature and wildlife near the home?* Literature overview http://www.map21ltd.com/overvecht/papers/natben.htm#nat

KIRBY, K., 1995. *Rebuilding the English countryside: habitat fragmentation and wildlife corridors as issues in practical conservation* (English Nature Science no.10). Peterborough: English Nature.

KIT CAMPBELL ASSOCIATES, 2001; *Rethinking Open Space. Open Space Provision and Management: A Way Forward.* Edinburgh: Scottish Executive Central Research Unit.

KLOTZ, S. 1990. Species/area and species/inhabitants relations in European cities. *In*: SUKOPP, H., HEJNY, S. & KOWARIK, I. (eds.). *Urban Ecology: plants and plant communities in urban environments*. The Hague: SPB Academic Publishing: pp. 99-103.

KUNICK, W., 1974. *Veränderungen von Flora und Vegetation einer Großstadt dargestellt am Beispiel von Berlin (West).* Diss. TU Berlin, 472 pp.

LANGE, E. & SHAEFFER, P.V., 2001; A comment on the market value of a room with a view. *Landscape and Urban Planning,* 55: 113-120.

LLEWELYN-DAVIS PLANNING AND ENVIRONMENT TRUST ASSOCIATES LIMITED, 1992. *Open Space Planning in London: final report.* London Planning Advisory Committee.

LONDON ECOLOGY UNIT (Eds.), 1992. Nature Conservation in Kingston upon Thames. *Ecology Handbook,* 18. London: LEU.

LUNIAK, M., 1983. The avifauna of urban green areas in Poland and possibilities of managing it. *Acta Ornithologica*, **19,** 3-58.

LUTTIK, J., 2000. The value of trees, water and open space as reflected by house prices in the Netherlands. *Landscape and Urban Planning,* 48: 161-167.

McDONNELL, M.J., PICKETT, S.T.A., GROFFMAN, P., BOHLEN, P., POUYAT, R., ZIPPERER, W., PARMELEE, R.W., CARREIRO, M.M. & MEDLEY, K., 1997. Ecosystem processes along an urban-to-rural gradient. *Urban Ecosystems,* 1(1): 21-36.

McKEOWN, T., 1979. *The Role of Medicine: Dream, Mirage or Nemesis*. Oxford: Blackwell.

McPHERSON E.G., NOWAK D., HEISLER G., GRIMMOND S., GRANT R. & ROWNTREE, R., 1997. Quantifying urban forest structure, function, and value: the Chicago Urban Forest Climate Project. *Urban Ecosystems,* 1: 49-61.

MILLWARD, A. & MOSTYN, B., 1988. People and nature in cities: the social aspects of planning and managing natural parks in urban areas. *Urban Wildlife Now,* 2. Peterborough: Nature Conservancy Council.

MIYASHITA, T., SHINKAI, T. & CHIDA, T., 1998. The effects of forest fragmentation on web spider communities in urban areas. *Biological Conservation,* 86: 357-364.

MORI (March - April 2000). *Consumer Focus for Public Services - People's Panel Wave 5.*

NERC (NATURAL ENVIRONMENT RESEARCH COUNCIL), 2001. *Air Quality and Urban Forests*. London: NERC.

NIELSEN, N.O., 1999. The Managing of Health. *Ecosystem Health,* 5(2): 65-66.

NIEMELÄ, J., 1999. Ecology and urban planning. *Biodiversity and Conservation*, 8: 119-131.

NOHL, W., 1984. *Städtischer Freiraum und Reproduktion der Arbeitskraft.* Munchen: IMU-Institut: Studien No.2. (In German).

NUFU (NATIONAL URBAN FORESTRY UNIT), 1998. *Trees Matter. The Benefits of Trees and Woods in Towns*. Wolverhampton.

NUFU (NATIONAL URBAN FORESTRY UNIT), 1999. *Trees & healthy living*. Proceedings of National Conference, Wolverhampton, UK, 17 November 1999.

NUFU (NATIONAL URBAN FORESTRY UNIT), 2002. *National Conference Greenspace & healthy living*, 14 May 2002, Manchester. Wolverhampton: NUFU.

NWRA (NORTH WEST REGIONAL ASSEMBLY), 2000.*Draft RPG for the North West.* Wigan: NWRA.

OWEN, D.F., 1983. *Garden Life*. Chatto and Windus. London: The Hogarth Press.

OWEN, S.M., DONOVAN, R., SKIBA, U., MACKENZIE, R. & HEWITT, C.N., 2000. *Air quality and volatile organic compound (VOC) emissions from urban forests in the UK*. Eurotrac 2 Symposium, BIA-22.

PAULEIT, S. & DUHME, F., 1995; Developing quantitative targets for urban environmental planning, *Land Contamination & Reclamation,* 3(2): 64-66.

PAULEIT, S. & DUHME, F., 2000; Assessing the environmental performance of land cover types for urban planning. *Landscape and Urban Planning,* 52: 1-20

PIRNAT, J., 2000. Conservation and management of forest patches and corridors in suburban landscapes. *Landscape and Urban Planning,* 52: 135-143.

RANDALL, K, SHOEMAKER, C.A., RELF, D. & GELLER, E.S., 1992. Effects of plantscapes in an office environment on worker satisfaction. *In:* Relf, D. (ed.) *The Role of Horticulture in Human Well Being and Social Development: A National Symposium*. Portland, Oregon: Timber Press.

RAPPORT, D.J., BÖHM, G., BUCKINGHAM, D., CAIRNS, J., COSTANZA, R., KARR, J.R., DE KRUIJF, H.A.M., LEVINS, R., McMICHAEL, A.J., NIELSEN, N.O., & WHITFORD, W.G., 1999. Ecosystem Health: The Concept, the ISEH, and the Important Tasks Ahead. *Ecosystem Health,* 5(2): 82-90.

REEVES, N., 2000. The condition of public urban parks and greenspace in Britain. *Journal of the Chartered Institute of Water and Environmental Management,* 14: 157-163.

RENMAN, G. &, MÖRTBERG, U., 1994. Avifauna - relation to size, configuration and habitat conditions of green urban areas in Stockholm. *In:* BARKER, G.M., LUNIAK, M., TROJAN, P. &. ZIMNY, H. (eds), *Memorabilia Zoologica,* 49. Proceedings of the II European Meeting of the International Network for Urban Ecology. Warsaw: Museum and Institute of Zoology, 245-255.

RICHARDS, G., & CURSON, T., 1992. *Survey of People Using St James Park, the Green Park and Regent's Park*. London: Centre for Leisure and Tourism Studies: University of North London Press.

ROBINSON, E.D., TRAILL, J.F., LAURIE, I.C., WAGER, J.F. (Eds.), 1976. *Landscape Evaluation*. The Landscape Evaluation Research Project 1970 – 1975. Manchester: University of Manchester, 304 pp.

ROHDE, C.L.E. & KENDLE, A.E., 1994; *Human well-being, natural landscapes and wildlife in urban areas. A review* (English Nature Science No. 22). Peterborough: English Nature.

SAVAGE, M., 2001; *Public use of natural greenspace in Manchester*. Unpublished MSc thesis, Manchester Metropolitan University

SHEFFIELD CITY COUNCIL, 2001. *Estimated Annual Visits to Sheffield's Parks and Woodlands: Analysis of the Citizen's Panel Talkback Survey 2000*. Sheffield: Sheffield City Council.

SMITH, D.S. & HELLMUND, P.C., 1993. *The Ecology of Greenways*. Minneapolis: University of Minnesota Press.

STADT LEIPZIG, 1996. *Umweltqualitätsziele und -standards für die Stadt Leipzig*, Leipzig, 61 pp.

STÜLPNAGEL, A. VON, 1987. *Klimatische Veränderungen in Ballungsgebieten unter besonderer Berücksichtigung der Ausgleichswirkung von Grünflächen, dargestellt am Beispiel von Berlin (West).* PhD Thesis. Berlin: TU Berlin (in German).

STÜLPNAGEL, A. VON, HORBERT, M. & SUKOPP, H., 1990. The importance of vegetation for the urban climate. *In:* Sukopp, H. (ed.), *Urban Ecology*, 175-193. The Hague: SPB Academic Publishing.

SUKOPP, H. & WERNER, P., 1983. Urban environments and vegetation. *In*: HOLZNER, W., WERGER, M.J.A. & IKUSIMA, I. (eds.). *Man's impact on vegetation*. Geobotany, 5. The Hague: Junk, pp. 247-260.

TEN PROJECT PARTNERS, 2000. *TEN 2000 - Trans-European Ecological Networks*. Unpubl. CD-Rom.

TJALLINGII, S.P., 2000. Ecology on the edge: Landscape and ecology between town and country. *Landscape and Urban Planning,* 48: 103-119.

TYRVÄINEN, L. & MIETTINEN, A., 2000. Property prices and urban forest amenities. *Journal of Environmental Economics and Management,* 39 (2): 205-223.

TYRVÄINEN, L., 1997. The amenity value of the urban forest: an application of the hedonic pricing method. *Landscape and Urban Planning,* 37: 211-222.

ULRICH, R., 1984. View through a window ma influence recovery from surgery. *Science Journal,* 224: 420-421.

ULRICH, R.S., SIMONS, R.F., LOSITO, B.D., FIORITO, E., MILES, M.A. & ZELSON, M., 1991. Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology*, 11: 201-230.

ULRICH, R.S., 2002. *The therapeutic role of greenspace. Summary of papers of the National Conference Greenspace & healthy living*, 14 May 2002, Manchester. Wolverhampton: National Urban Forestry Unit (NUFU).

UNIVERSITY OF NEWCASTLE, SCHOOL OF ARCHITECTURE, 2001. *Improving Green Urban Spaces. Beacon Councils Research - Round 3 Theme Report.* London: Department of Transport, Local Governance and the Regions.

URBAN GREEN SPACES TASK FORCE, 2002. *Green Spaces, Better Places: Final report of the Urban Green Spaces Taskforce.* London: DTLR.

URBAN TASK FORCE, 1999. *Towards and Urban Renaissance: the Report of Lord Rogers' Urban Task Force.* London: Urban Task Force.

WATERS, T. & SMITH, M., 1999. *The Planning and Management of Urban Open Space in Scotland: A Case study based on the Development of Dundee's Public Open Space Strategy.* Scottish Natural Heritage (Eds.). SNH Review Series No. 130.

WHITFORD V., ENNOS R. & HANDLEY J., 2001. City form and natural process. indicators for the ecological performance of urban areas. *Urban and Landscape Planning,* 57: 91-103.

Annex 1. Local authority interviewees

Barking and Dagenham	Simon Swift, Group Manager Parks & Leisure Development
Blackburn with Darwen	David Proctor, Forward Planner
Bracknell Forest	Helen Tranter, Head Open Spaces, Countryside and Heritage and Nigel Smith, Senior Ranger
Brentwood	Steve Plumb, Landscape and Environment Manager
Brighton and Hove	Matthew Thomas, Ecologist
Cambridge	Elizabeth Rolph, Senior Planning Officer
Canterbury	Richard Backhouse, Planning Officer
East Dorset	William Wallace, Assistant District Planning Officer
Enfield	Philip Sheail, Planning Officer
Fylde	Julie Winterbottom, Planning Officer
Hinckley and Bosworth	Paul Tebbit, Planning Officer
Manchester	Mike Savage, Greenspace Project officer
Newcastle-upon-Tyne	Stephen Thompson, Planning Officer
Northampton	Steve Pointer, Head, Local Plans Unit
Peterborough	Mark Crick, Wildlife Officer
Salisbury	Amanda Mathews, Landscape Architect and Sarah Hughes, Planning Officer
Sandwell	Roy Croucher, Senior Countryside Ranger
Scarborough	Bob Missin, and Dave Williams, Principal Planning Officer
Sedgefield	Johnathan Elmer, Countryside Officer
Selby	Sally Cawthorn, Senior Planning Officer
Sheffield	Valerie Greaves, UDP Topic Officer Green Environment, Leisure and Recreation and Planning Transport and Highways Service
Southwark	Julie Tallentire, Environmental Development Manager
Stafford	Alex Yendole, Planning Officer
Taunton Deane	Ian Clark, Heritage and Landscape Officer
Waltham Forest	Hazel Walsh, Nature Conservation/Tree Preservation Officer
Warrington	Peter Stevens, Principal Planner
Warwick	Philip Clarke, Group Leader Policy, Projects & Conservation
Westminster	Mike LeRoy, Environment Policy Manager
Wigan	Martin Stuart, Planning Officer
Worcester	Chris Dobbs, Landscape Architect

Annex 2. Expert body interviewees

Birmingham City Council	Nick Grayson, Nature Conservation and Sustainability Manager
Bristol City Council	Sophie Price, Nature Conservation Officer
Clive Payne Consultancy	Clive Payne, Principal
Countryside Commission for Wales	Gareth Roberts, Head of Recreation, Access and European Affairs
Greater London Authority	Dave Dawson, Biodiversity Strategy Manager Ian Yarham, Environment Officer John Archer, Clare Hennessey, Senior Planner
Greater Manchester Ecology Unit	Anne GreatRex, Principal Ecologist
Hertfordshire County Council	Simon O'Dell, Head of Landscape
Joint Nature Conservancy Committee	Marcus Yeo, Head of Habitats
Kent County Council	Andrew Jones, Principle Countryside Officer
Lancashire Wildlife Trust	Anne Selby, Chief Executive
Leicester City Council	Sue Timms, Nature Conservation Officer
Scottish Wildlife Trust	Fiona Stewart, Glasgow Area Conservation Manager
Stockport MBC	Vanessa Brook, Ag. Development Manager
The Countryside Agency	Andrew Gale, Senior Policy Officer
The Wildlife Trust	Rob Stoneman, Director of Conservation
Walsall MBC	Dave Haslam, Senior Nature Conservation Officer

Annex 3. Project method

This report constitutes the output from a review of English Nature's ANGSt standard, the first phase of a two-stage research project. The second phase, the development of an implementation tool-kit for local authorities, is to be documented separately at a later date. This Annex outlines the research method used in the conduct of the review which forms the basis for this report.

This part of the study has, in particular, explored ways to improve the reliability, validity and practicability of the ANGSt model and examine how a successful implementation can be achieved in the context of the current planning framework. The study has provided a detailed review of the implementation of ANGSt, based on a review of relevant literature and policy documentation; interviews with local authorities, English Nature, other organisations and experts; and a number of illustrative case studies. The barriers and limitations to implementation have been highlighted and, on this basis, the report has set out recommendations to improve and further the ANGSt model.
Key issues were:

- *Definitions*: the review evaluated whether the definitions of natural green space and accessibility are unambiguous and operational. Accessible natural green space needs to be defined in terms of attributes which can easily be mapped and preferably are based on available data or readily accessible sources of information such as aerial photographs. At the same time, the definitions need to be valid (i.e. accurately representing what they stand for) and reliable (e.g. they should produce comparable results when applied by different users and in different situations).
- A huge range of natural green spaces exist in urban areas and it is difficult to clearly distinguish these from other forms of open space. Equally, accessibility needs a clear, operational and valid definition. The review will inform the development of a tool-kit to facilitate the implementation of the ANGSt model under given pressures of day-to-day planning practice.
- *Information sources*: The review has evaluated existing information held by local authorities, in particular to identify whether this is sufficient to implement the ANGSt model. Recommendations have been made on how to overcome information gaps.
- *Tools*: Geographic Information Systems (GIS) have become widespread and will be a key tool in implementing the ANGSt model. In addition, the Internet provides an opportunity to enhance communication and improve community involvement. For instance, individuals and organisations will be able to inform themselves on where to find accessible natural green space. They will also be able to report on barriers to access and impediments to green space quality.
- The review has assessed the current use of these tools in local authorities and has made recommendations on how to use them effectively for implementation of ANGSt. Examples of good practice have been used to illustrate the applications. The review has considered how the ANGSt model can be developed into a comprehensive tool-kit for planning and monitoring of urban natural green spaces.
- *Urban landscapes*: The large differences that exist between English towns and cities may require more specific approaches which tailor ANGSt to the specific requirements of different categories of urban areas as well as the neighbourhoods within. Case studies in different types of urban areas, selected on the basis of an

accepted analytical framework, have served to assess whether the ANGSt model meets these requirements and how it needs to be adapted to different urban situations without losing its practicability. The study has also investigated whether a distinction of neighbourhoods based on urban morphology can be an appropriate method to assess the provision and quality of natural green space within urban areas, and to define a differentiated set of standards on this basis. This information was needed particularly to develop a user-friendly tool-kit providing guidance and examples of good practice for each urban landscape type. The project has also studied if and how landscape ecological criteria - in particular the proximity and connectivity of natural green space to form a coherent system or green networks - need to be incorporated into the ANGSt model.

- *Integration with other open space standards*: While there may be a need for more detailed specification of ANGSt standards, there is also a case for integration. The study has explored the scope for an integrated framework for green space standards (i.e. general open space standards and standards for provision of playing fields), and the potential relationship / implementation via revised planning policy guidance (PPG17).

The project's research methodology involved a number of specific elements:

- **Literature and policy review**: to examine the state-of-the-art of current discussion of green space standards, and urban green space planning. The literature review particularly aimed to identify what can be learned from other approaches to define green space standards. The review was based on scientific journals and published reports from relevant agencies and organisations as well as an Internet search (based on both a 'key words' search and a more targeted search of the websites of relevant UK based and international organisations). Simultaneously, a policy-based review discussed the context for the ANGSt model, based on published policy documents.
- **Interviews:** Face-to-face and telephone interviews with local authorities, English Nature and other experts, based on a semi-structured questionnaire, were held to review the use of the ANGSt model across a range of local authorities, and to identify the barriers and limitations to its wider implementation.
- **Case studies** were undertaken to gain a deeper insight into the potential and current limitations in the use of ANGSt model. Case studies were selected from among the local authorities interviewed either randomly or as 'expert' bodies, with a view to illustrating good practice and innovation in the application of standards such as ANGSt.

The 1991 Census classification of urban areas (see Table 1) was adopted as an overarching framework for the selection of local authorities for inclusion in the survey sample, which was selected randomly based on the need to ensure a balanced geographical coverage by region.

Table 1: Urban Types (Types based on 1991 Census Classification)

Urban Types (Census Classification)	Amended Classification for the Review
Inner London	London
Outer London	
Metropolitan Districts: Principal cities	Metropolitan Districts
Metropolitan Districts: others	
Non-Metropolitan Districts: Cities	Non-Metropolitan Districts
Industrial Districts	
New Towns	New Towns
Resort and Retirement	Resort and Retirement
Mixed and Accessible Urban/Rural	-------- (not included) ---------
Remote, Largely Rural	-------- (not included) ---------

Performance and quality

The prime responsibility for performance and quality was with the project team, and especially the project Director. However, an internally appointed Quality Assurance Manager maintained a watching brief on the project, to assure the achievement of project milestones and to peer review draft reports. The Quality Assurance Manager was Prof. Christopher Wood B.Sc., Dip.T.P., M.A., Ph.D., F.R.T.P.I. Professor Wood is Chairman of the Environmental Planning & Management Research Group within the School of Planning & Landscape and Director of the University's EIA Centre. Chris Wood has extensive expertise of contract research with DETR, Highways Agency, European Commission, *et al.*, and a good working knowledge of urban planning in a British context.

Project structure

Professor John Handley directed this project with project management from Dr. Stephan Pauleit and dedicated research input provided by Paul Slinn. Dr. Stephan Pauleit was responsible for the day-to-day management of the project, and provided input by continuous supervision. Given the multi-faceted nature of this project it was felt that there was also a need to consider a range of different issues in order to produce the best possible outputs. Accordingly the project team included individuals with specific expertise in: planning policy and practice (Mr. Mark Baker), environmental planning and research design (Dr. Carys Jones); data and systems analysis (Dr. Sarah Lindley); and the green space planning context (Mr. Alan Barber). Specific details and credentials of all of the project team can be found in the personal summaries in Annex 4.

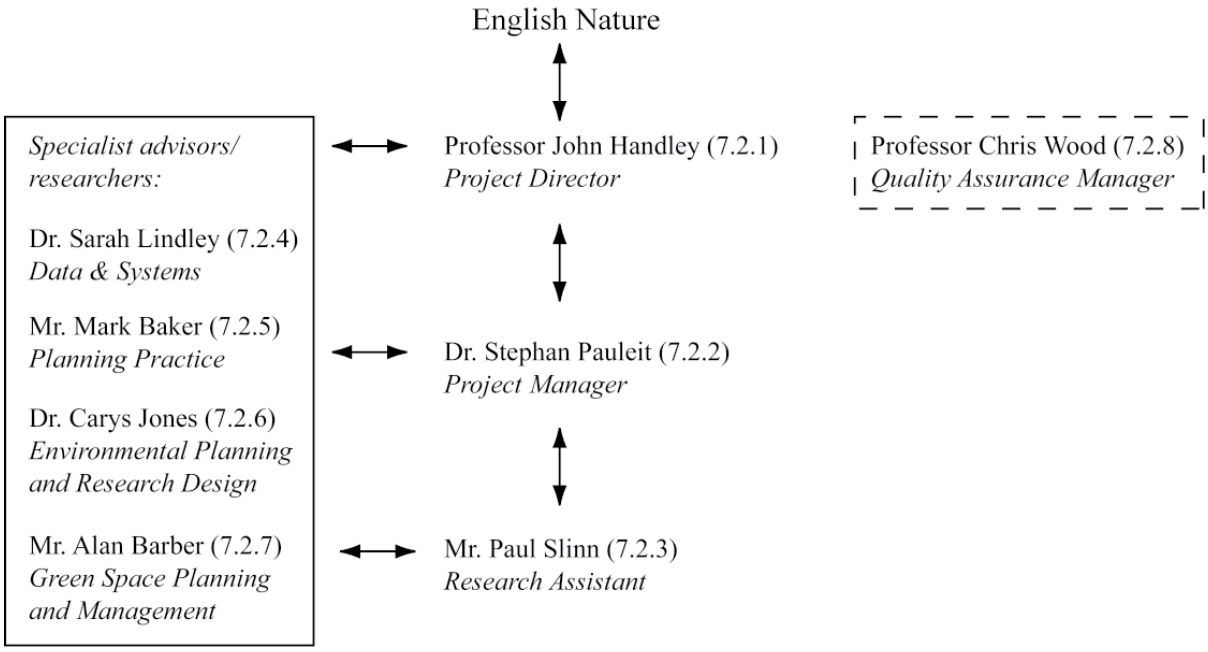


Figure 1: Project Team and Management

Annex 4. Brief details of team members

Professor John Handley O.B.E., B.Sc., M.Sc., Ph.D. (Professor of Land Restoration & Management and Director of CURE). He started out as an applied ecologist working for six years with Professor Tony Bradshaw at the University of Liverpool on problems of land restoration. In 1975 he joined the newly formed Merseyside County Council as a principal planning officer responsible for all facets of natural resource management: survey, policy development and implementation. He pioneered the development of the Groundwork network for local sustainability in the UK before joining Manchester University in 1994.

Dr Stephan Pauleit Dipl.Ing., Ph.D. (Lecturer in Landscape Planning and Management) who joined CURE from the Technical University of Munich leads CURE's Landscape Impacts and Futures Programme. He brings expertise and experience in landscape planning and landscape ecology, and was involved in developing a nature conservation programme for the City of Munich. In a follow up-study he investigated the environmental performance of urban morphology types. He is a member of European Union funded COST research networks on urban forestry and greenstructure planning.

Mr Paul Slinn, (Principal Researcher of the project), has recently completed the MA programme in Environmental Impact Assessment & Management. Paul's MA dissertation was concerned with the environmental management of industrial estates projects; in particular the strategies for landscape restoration and enhancement. Initially trained in archaeology, including a thorough grounding in physical geography, he then pursued a career with the British Council. His work involved responsibility for managing various teams delivering projects in Latin America, China and Malaysia.

Alan Barber FILAM, Hon ALI, FI Hort. (Consultant, part-time Lecturer in Greenspace Planning and Management) started his consultancy career in 1992 following his management of the parks and green spaces of the City of Bristol for nearly twenty years, where he worked closely with the planning department in developing supplementary planning guidance on public open space. He is a member of the Government's new Urban Green Spaces Task Force. Previously he was specialist advisor to the House of Commons Environment Sub-committee Inquiry into Town and Country Parks. He is a member of the National Urban Forestry Unit's Technical Advisory Panel and an Expert Advisor to the Heritage Lottery Fund.

Mark Baker B.Sc., MCD, MRTPI (Lecturer in Town Planning) is a chartered town planner with previous practice experience in both local and central government. He first worked as a professional planner for Durham County Council and has subsequently worked as a senior planning officer in two different Government Offices and as a lecturer at both Newcastle and Manchester Universities. His research interests are in regional and strategic planning and the operation of the UK planning system, including development plan and development control procedures. His recent projects include an examination of the effectiveness of the structure planning process for DETR.

Carys E. Jones, B.Sc, M.Sc, Ph.D (Lecturer in Environmental Planning and Management & Co-Director of the EIA Centre) Carys undertook research for a PhD thesis on upland land use and its effect on water quality in a reservoir catchment. Carys has undertaken two ESRC funded research projects: the effect of EIA on planning decisions in the UK and auditing the environmental impacts of planning projects. Both these projects were based around a case

study approach involving extensive use of questionnaires and interviews to gather data. She has a strong interest in biodiversity planning and is an expert field naturalist.

7.2.4 Sarah Lindley B.A., M.Sc., Ph.D. (Lecturer in Geographical Information Systems)**.** A modeller and a specialist on the advanced use of GIS, Sarah is currently developing an interactive scenario model for sustainability planning, to the North West Region of England. Prior to joining CURE she worked on a variety of Local Authority air quality management projects and also brings specialist expertise in atmospheric issues. Sarah has extensive experience into the nature and extent of data holdings available to planning authorities as well as information system requirements of the ANGSt tool-kit.

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Top left: Using a home-made moth trap.
Peter Wakely/English Nature 17,396
Middle left: Co_2 experiment at Roudsea Wood and Mosses NNR, Lancashire.
Peter Wakely/English Nature 21,792
Bottom left: Radio tracking a hare on Pawlett Hams, Somerset.
Paul Glendell/English Nature 23,020
Main: Identifying moths caught in a moth trap at Ham Wall NNR, Somerset.
Paul Glendell/English Nature 24,888