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Nature conservation in towns and cities

A framework for action

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Introduction

1.1 Local authorities and urban nature conservation

Nature conservation has until recently been viewed as an activity confined to protecting rare or threatened species or areas of valuable natural or semi-natural habitat, primarily in the countryside. Nature in our congested and polluted towns and cities has received correspondingly little attention. Indeed in many areas the natural elements of our towns and cities have been actively discouraged. However, during the past decade this negative attitude towards urban nature has been changing as the importance of wildlife in towns and cities has been recognised, conceptions of urban nature conservation have broadened to include any activity which promotes nature.

As our understanding of the natural processes and environmental factors which underlie the urban system has shown, some of the more pressing environmental problems characteristic of urbanisation could be alleviated if natural processes were taken more fully into account in urban design.

Growing public awareness and concern for the quality of the environment and the needs of wildlife has been matched by mounting scientific and public concern over the continuing loss and fragmentation of habitats in the countryside. It is evident that there is clear justification and public support for action to protect and promote nature in towns and cities.

All local authorities and other public bodies share a duty under sections 11 and 49(4) of the Countryside Act 1968 to "have regard to the desirability of conserving nature" when exercising any of their functions in relation to the use of land.

The Wildlife and Countryside Act 1981 strengthens and extends this duty with respect to water authorities and other bodies engaged in land drainage; they are assigned a duty to "further the conservation and enhancement of natural beauty and the conservation of flora, fauna and geological and physiographical features of special interest".

The Department of the Environment Circular 27/87 (Welsh Office 52/87) re-affirms the Government's commitment to the conservation of the natural heritage. As well as expecting local authorities to uphold the network of statutorily designated sites, it draws their attention to the nature conservation interest outside these areas, and encourages them to use the guidance and advice of the Nature Conservancy Council. Local authorities are expected to include nature conservation policies in

structure and local plans and take account of them in deciding planning applications. They are also expected to take nature conservation fully into account in their own land management practices. The Circular also draws attention to the need to take account of urban wildlife: "Our natural wildlife heritage is not confined to the various statutorily designated sites and there is a continuous gradation of nature conservation interest throughout the countryside and in many urban areas."

The combined intent of these measures is to ensure that in the exercise of their functions, all local authorities should take account of, and where possible promote nature conservation in urban as well as rural areas.

Opportunities for local authorities to further urban nature conservation are not necessarily limited to defining statutory functions (these being primarily in planning and land management). Local authorities play a unique role in determining the growth and development of urban areas and many aspects of their work have direct or indirect impact on the natural environment. Nature conservation cannot be treated in isolation from other physical and human elements of the urban environment and should be integrated with all local authority functions. The local authority can obtain support in the discharge of its responsibilities by building links with the local community and the many voluntary organisations concerned with wildlife and the urban environment. In this way the spirit as well as the practice of nature conservation can be developed. Partnerships with the voluntary sector may also improve the effectiveness of nature conservation by helping the authority to gain access to practical experience and specialist expertise. It also helps to improve contact with the local community.

In summary, the role of local authorities is threefold—

- They should ensure that development and use of land is not detrimental and, where possible, is beneficial to the needs of wildlife, and is designed in harmony with natural processes rather than against them.
- They should actively seek to promote nature conservation on all council owned or managed land.
- They should aim to foster links with the local community and particularly with the diverse range of local, regional and national environmental organisations which form the voluntary sector.

This report aims to establish a framework for local authority action within these three key areas. It is based on an extensive consultation exercise in which local authorities were asked to provide details of their current involvement in activities which promoted urban wildlife, and of the motivation for their involvement. The survey therefore comprises a general review of contemporary 'good practice' in urban nature conservation. The criteria for deciding what is 'good or bad' from the perspective of urban nature conservation are provided in the form of a series of comprehensive principles, each of which is reviewed in depth in the companion document *Principles for nature conservation in towns and cities* (Urban wildlife now No. 3, NCC 1989).

1.2 Wildlife in the urban environment

Towns and cities contain a surprising variety of habitats and species of plants and animals. Their quality and quantity may vary over comparatively small areas. This reflects the nature of the urban environment – a mixture of green and open spaces and built development which may sometimes encapsulate quite large areas of countryside.

Most species of plants and animals are associated with specific habitat types. As one moves from the remnants of the countryside on the urban fringe to the densely developed inner cities, native plants and animals requiring large areas of undisturbed semi-natural habitat are replaced by those which can survive extremes of environmental stress and make do with small patches of neglected ground, or with artificial or intensively managed habitats.

Large expanses of green vegetation are not necessarily indicative of a rich and varied wildlife habitat. Vast areas of our modern towns and cities are covered with intensively maintained, uninspiring amenity landscapes called 'green deserts' or formal parks and gardens which may be attractive but have comparatively little value for wildlife. Similarly, mass plantings of non-native trees and shrubs for landscaping purposes round buildings, alongside roadways and in other 'infill' areas have limited value. Such areas contrast sharply with the rich and diverse plant and animal communities to be found on neglected or abandoned railway land, canals, derelict sites or old mineral excavations.

Legislation requires local authorities to take account of these wildlife resources and the ecological impact that their policies and practice may have on them and there are good reasons why every effort should be made to promote wider development of urban nature conservation.

Social benefits

Many urban dwellers, particularly those in inner

city areas and those without private transport, cannot easily gain access to the countryside. More and more people are becoming interested in nature conservation and showing a growing awareness of the quality of their surroundings. As a consequence there is a greater demand than ever for accessible wildlife sites in built-up areas. Areas of green space satisfy people's need for contact with the natural world. They are valuable for informal recreation as well as helping to develop a 'sense of belonging to a place'.

Local people should be given the opportunity to become actively involved in the planning, design and management of local sites. This helps to foster a sense of community. There is a clear need to develop areas of semi-natural green space to provide the urban population with places where they can escape from the rigours and stresses of the built environment and enjoy the richness and variety of nature.

Environmental benefits

Apart from their aesthetic appeal, green spaces, including formal parks and gardens, may also help to control the excesses of the built environment. Large areas of green space help to improve climatic conditions, facilitating cooling, and regulation of air interchange. Even small areas of trees and shrubs can provide shade and shelter. Planted areas may act to remove air pollution by filtering out dust particles and absorbing pollutant gases such as sulphur dioxide. Noise pollution also can be alleviated by plant cover.

Wildlife benefits

In our countryside plants and animals have come under increasing pressure from modern agricultural practices including the application of pesticides and fertilizers. Over the past few decades our towns and cities have become much cleaner as measures of pollution control have taken effect. It is not surprising therefore that the number of wild plants and animals in urban areas is increasing while those in rural areas are diminishing. Nature conservation is no longer a purely 'countryside' issue. Moreover, many people consider that society has a moral responsibility to protect and promote wildlife wherever it may occur.

Educational benefits

An interest and knowledge of natural history can best be acquired through direct contact with nature. This experience is enhanced when gained in the environment in which young people live. The development of semi-natural habitats close to schools and colleges and, indeed, anywhere close to where people live helps to foster understanding of and caring for urban wildlife. Many sites represent fragments of local history and may be valuable in building up links with and awareness of the historical continuity of an area.

Economic benefits

There are several ways in which the economy benefits from the development of urban nature conservation. By contributing to general environmental improvement and helping to create attractive and pleasant surroundings, greenspace can help to stimulate investment in urban areas. Some vegetation cover may offer commercial returns, for example through forestry or hay cropping. Others may prove to be cheaper to maintain than more intensively managed formal landscapes. Development of semi-natural greenspace could also help to generate employment, particularly among young people.

In the light of these benefits an increasing number of local authorities are now recognising that they should take positive action to promote nature in the exercise of their functions. If efforts and resources are to be targeted effectively towards those measures which are most likely to promote the interests of wildlife, authorities should work within a framework designed to optimise the benefits for nature conservation and minimise conflicts between resource and land-use allocations.

1.3 Development of a framework for action

Man's understanding of urban ecology is expanding rapidly but is still far from comprehensive. Our understanding of the key theoretical and practical issues, however, is such that it is possible to identify the basic issues which are important in governing the extent to which measures designed to promote nature will ultimately be successful. A detailed exposition of the basic principles for urban nature conservation is given in the companion document. During the research, a summary of these fundamental principles was prepared as the focus for discussion with local authority officers. These 'summary principles' are used as the basis for this report.

The framework for local authority action to promote nature in towns and cities derives directly from the principles. It consists firstly of the summary principles which represent general targets for local authority action; and secondly makes recommendations on the ways in which these principles may be integrated within a conventional local authority organisational structure. These recommendations are based on the practical experiences of authorities active in promoting nature conservation in urban areas. The fundamental approach of the research underlying these recommendations has been to consult with a wide range of organisations involved in promoting conservation and to invite comment on the practicability or indeed the desirability of implementing the fundamental principles. In this way the research reflects experiences and opinions of those most active as well as those who have yet to take advantage of the many opportunities to protect and promote wildlife.

Methodology

The research method was essentially a combination of direct consultations with local authority officers, reviews of publicly available information on local authority activity and reviews of secondary information derived from national and local nature conservation organisations. The aims of the general consultation exercise were –

- To identify present levels of awareness, acceptance and implementation of the 'summary principles' -as summarised in section 2.1 of this report.
- Assess the degree to which urban nature conservation is explicitly recognised in the structure and statutory activities of the authorities and the degree to which it is promoted.
- Investigate whether different types of authority, area, settlement or administration have an influence on the prospects for implementing the summary principles.

The consultation exercise was conducted in four stages as follows –

- General press releases were issued to all trade and professional journals in selected key areas of interest (such as planning, land management, architecture, engineering, environmental conservation etc.). The releases described the project and invited interested parties to contact and contribute ideas and experiences to the research team.
- In-depth telephone interviews were carried out with officers in various local authorities in England, Wales and Scotland. The frame for the telephone interviews was based on a stratified sample of 32 authorities selected to provide a range of structure (Metropolitan / Non-Metropolitan, County / Regional / District, Development Corporation, London Borough), sizes (Conurbation / City / Town), and location (England / Wales / Scotland, North / South). Each authority was contacted by a letter to the Chief Executive inviting him to forward the correspondence to relevant departments. The letter was accompanied by a copy of the draft version of the summary principles for nature conservation. Interviews with officers were conducted using outline interview guides covering general issues of relevance to the research.
- A written enquiry was sent to a random sample of over 200 local authority departments. The letter asked local authorities to provide comments on the summary of the principles enclosed with the letter and in particular to comment on—
 - Issues which affected their ability to implement these principles.

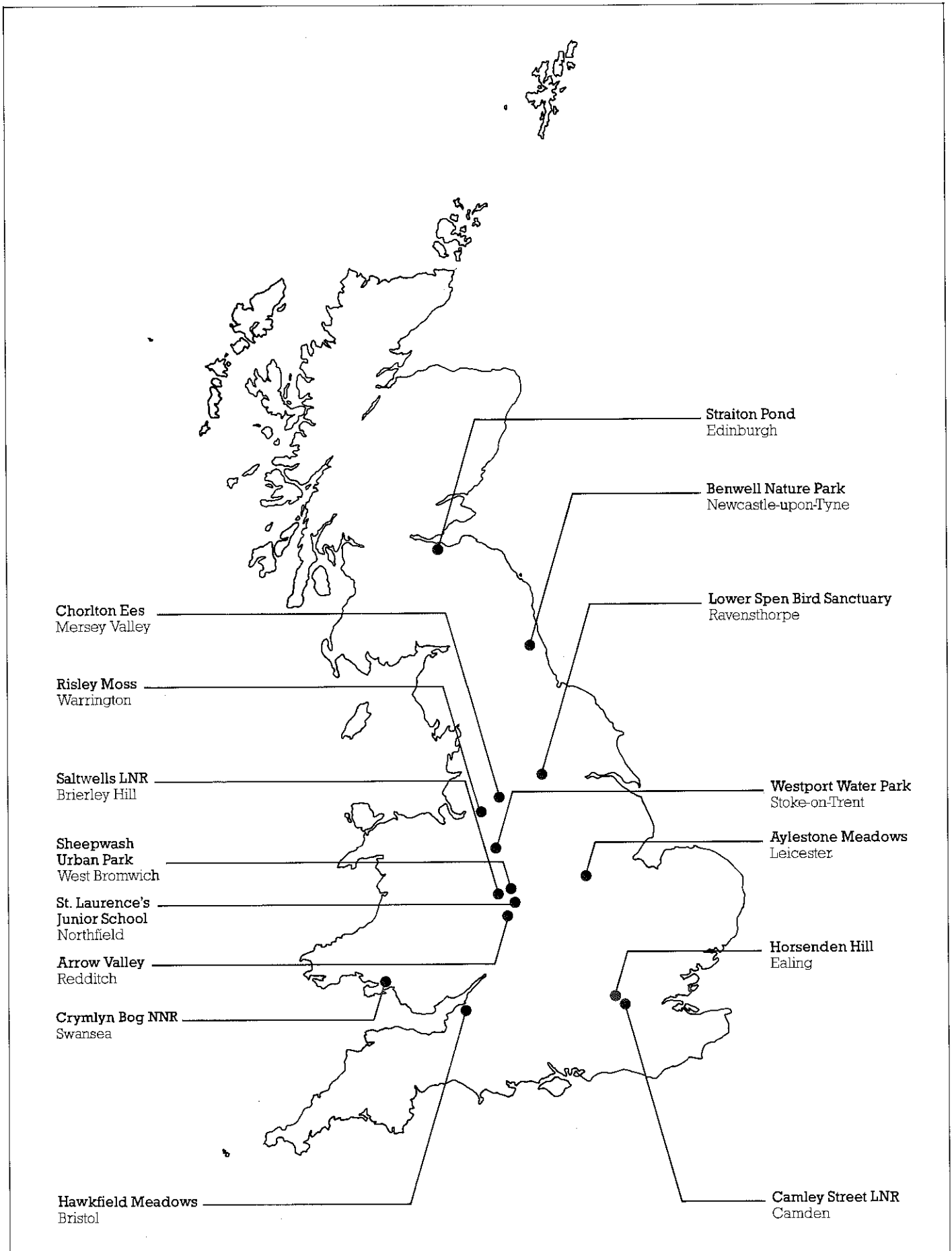


Figure 1 Map showing the location of the fifteen sites documented in Appendix 2.

- Examples of policies, practices and schemes which demonstrated good or bad nature conservation practice.

More than a quarter of all local authority departments replied to this general request for information.

- The research team then made individual visits to 15 local authorities and 55 selected sites and schemes. Documentary site profiles were compiled to illustrate the range of on-site projects which local authorities were involved in. A selection of these site profiles have been included as Appendix 2 in order to illustrate the diverse range of projects and initiatives that authorities throughout the country are involved in. A summary of the geographical location of the documented sites is given in Figure 1. Figure 2 indicates which of the theoretical principles are relevant to each site profile. A full listing of all fifty five site/schemes visited by the survey team is given in Table 1.

In addition to formal consultation procedures the researchers also contacted a range of voluntary organisations and other researchers active in this field to discuss general issues connected with the project. The material gathered during the consultation exercise, together with information derived from a review of the extensive literature on urban nature conservation gives a general picture of issues facing local authorities, the practices currently being developed and the rate of progress towards fully implementing the principles. It should be noted however, that within the resources available to the project, it was not possible to contact every local authority department and therefore the information contained in this report should be seen only as an indication of the main issues. The examples of practices and schemes quoted in this report are designed to illustrate the state of progress towards implementing the principles (and the practical objectives derived from the principles), and therefore they should not be taken as 'best practice' but merely as examples of contemporary 'good practice'.

Report structure

The report presents an outline of the framework for urban nature conservation in Section 2 followed by a detailed review of the main obstacles and opportunities which influence the extent to which this framework can be put into practice in Section 3. The report concludes in Section 4 with a general assessment of the current 'state of the art' together with a brief summary of the main conclusions of the report.

Table 1. Site visits conducted during the survey.

Host local authority	Sites and schemes visited
London Borough of Ealing	Horsenden Hill Perivale Wood (Selbourne Society)
Leicester	Aylestone Meadows Ralley Community Park Piper Way Neighbourhood Nature Area Watermead Ecological Park Spinney Hill Park Knighton Spinney Braunstone Park
Redditch	Arrow Valley Park Forge Lake Ipsley Alders Marsh Bordesley Meadows North Moons Moat Industrial Estate Oakenshaw Spinney
Kirklees	Kirklees Festival Site/Caulms Wood Spen Valley Mirfield Showground Bradley Wood Cliffe House, Shepley Moor End High School
Manchester	Clayton Vale Bennett Street Blackley Forest
Warrington	Risley Moss Oakwood
Bristol	Hawkfield Meadows Dundry Slopes Urban Fringe Hartcliffe Community Park Farm Whitchurch Urban Fringe Project Eastwood Farm Public Open Space Project
Swansea	Crymlyn Bog Rose Hill Quarry Bishops Wood
Birmingham	Ackers Trust St Laurence's School
Lb of Camden	Russells Nurseries Waterlow Park Pond Camley Street LNR
Newcastle	Benwell Nature Park Percy Pit Tyne Riverside Country Park Newburn Grange Walbottle Waggonway Big Waters Nature Reserve
Edinburgh	Straiton Pond Union Canal Water of Leith Walkway
Stoke-on-Trent	West Port Water Park/Fowlea Brook West Port Greenway Ford Green Brook Nature Area
Sandwell	Forge Mill Farm Sheepwash Urban Park

Site	1 Environmental	2 Planning	3 Development	4 Pollution	5 Groundwater	6 Historical continuity	7 Corridors	8 Size	9 Local variety	10 Diversity	11 Buildings	12 Native species	13 Introduction	14 Disturbance	15 Zonation	16 Low maintenance	17 Enhancement	18 Hydrosere	19 Public safety	20 Public education	21 Schools	22 Public access
Horsenden Hill, Ealing						●	●	●	●	●		●				●	●	●		●		●
Aylestone Meadows, Leicester		●					●	●	●	●		●		●	●	●	●	●		●		●
Arrow Valley, Redditch	●	●	●	●	●	●	●	●	●	●	●					●	●	●		●		●
Saltwells LNR, Brierley Hill		●						●	●	●				●	●	●	●	●		●		●
Lower Spen Bird Sanctuary, Ravensthorpe				●	●			●	●	●				●	●	●	●	●		●		●
Chorlton Ees, Mersey Valley		●					●	●	●	●		●		●	●	●	●	●		●		●
Risley Moss, Warrington		●		●		●		●	●	●		●		●	●	●	●	●		●		●
Hawkfield Meadows, Bristol		●	●					●	●	●		●				●		●	●		●	
Crymlyn Bog NNR, Swansea		●	●	●		●		●	●	●				●	●			●	●		●	
St. Laurence's Junior School, Northfield									●	●									●		●	
Camley Street LNR, Camden		●					●		●	●		●							●	●	●	●
Benwell Nature Park, Newcastle-upon-Tyne		●					●		●	●		●							●	●	●	●
Straiton Pond, Edinburgh		●		●					●	●			●	●				●	●	●		●
Westport Water Park, Stoke-on-Trent		●		●	●				●	●		●					●	●	●		●	●
Sheepwash Urban Park, West Bromwich		●		●		●			●	●		●					●	●	●		●	●

Figure 2 Links between the illustrative site profiles and the principles for nature conservation.

Nature conservation in towns and cities: a framework for action

This section presents the basic 'framework for action' which local authorities are invited to consider in the context of their own involvement in promoting nature conservation in towns and cities. The framework consists of two parts –

- A summary of the principles for urban nature conservation.
- Recommendations on the organisational issues that local authorities should consider in responding to the challenge of implementing the principles.

This 'framework for action' has been established in consultation with local authorities. It focuses not on specific changes in existing practice, but on general actions which when taken together will help to create a supportive atmosphere for initiatives to promote nature conservation at all levels of planning, design and management. More detailed practical advice and guidance on specific aspects of urban nature conservation should be sought from professional associations, national voluntary organisations, the Nature Conservancy Council or specialist nature conservation advisers.

It is recommended that all local authorities should review their existing role in the context of this framework and adopt a positive package of measures to integrate the principles at all levels of planning, policy and practice.

2.1 Summary of the principles for urban nature conservation

Main general environmental and planning issues

General consideration of environmental factors in strategic and local plans

Environmental factors and natural processes need to underlie comprehensive planning for town and city development or redevelopment.

Recognition of wildlife in planning

The needs of wildlife should be taken into account in planning. Local authorities must seek opportunities to further nature conservation in their work. While the protection of the best existing habitats is of great importance it is also essential to identify areas of towns and cities which have no or little semi-natural open space and to seek to remedy this deficiency.

Recognition of wildlife in development

Built development does not necessarily lead to drastic losses of wildlife habitat. In some circumstances redevelopment of old sites/areas can give an increase in wildlife habitat. Every effort needs to be made to harmonize built development with the needs of wildlife and to make the most of any chances there are both to protect features of value and to create new semi-natural habitats in the execution of work.

Ecological guidelines for urban development and planning

Avoidance of pollution

Every effort should be made to reduce existing levels of chemical pollution of the soil, air and water. Levels seen as acceptable in terms of human health are still highly damaging to many species of plant and animal.

Maintenance of ground water levels

Whenever possible, impermeable surfaces should be avoided. Surface water drainage should be channelled where possible into ponds and soakaways rather than into watercourses.

Historical continuity

Primary ecotopes or those with a long history of the same kind of management are particularly valuable for nature conservation. They should be identified and protected.

Value of corridors

In order to reduce the effects of isolation on plant and animal populations 'islands' of green space should be linked by green corridors. The provision of small 'stepping stone' open spaces is also valuable, but to a lesser degree.

Maintenance of large areas

A single large area of green space is more valuable ecologically than an equivalent area of separate open spaces.

Maintenance of local variety

During the planning of built or green space development all places which hold ecotopes or species uncommon in the area should be identified and protected.

Maintenance and creation of diversity

Notwithstanding the value of large blocks of a single ecotope, diversity is important in urban areas. Every effort should be made when creating new open space to avoid uniformity and to encourage diversity.

Buildings as a resource for wildlife

Buildings need not act as complete ecological blockages in the development of corridor systems. In heavily built-up areas an increase in wildlife habitat can be achieved by the use of roof gardens, climbing plants on walls, the use of window boxes and so on. Bird nesting cavities or bat roosting sites are better designed into structures than simply left to chance.

Measures to be taken for the care and development of habitats

Use of native species in landscaping

It is preferable to use trees, shrubs and herbs native to the particular area of the country than alien species or cultivars in planting schemes. Ground conditions and/or the constraints imposed by pollution on the urban climate may, however, restrict the range of useful native species.

Introduction/re-introduction of species

Where expert opinion is that habitat conditions are right and that adequate protection can be given positive steps should be considered to re-introduce species which once occurred in the area. The introduction of species which have no history of occurrence in the general area should not be carried out without detailed expert opinion being sought or without examination in the light of the requirements of the Wildlife and Countryside Act 1981.

Prevention of all avoidable disturbance to existing green space

To further the conservation of ecotopes and species there must be a general presumption against disturbance to, or development of, well established green spaces with a semi-natural flora and fauna.

Zonation of use of open spaces

The use of open spaces should be so zoned and channelled as to ensure that only light use is given to areas susceptible to disturbance and trampling. The natural carrying capacity of different ecotopes and the influence of topography and soil type on erosion need to be taken into account at the planning stage. Wetlands, woodlands, steep slopes and light acid soils are particularly vulnerable.

Low maintenance management of open space

Many ecotopes require active management to

ensure their survival. However, management should be so planned as to cause the least possible disturbance.

Enhancement of existing open spaces

Many existing areas of green space have little value to wildlife. Progressive improvement for wildlife should be an objective of management.

Protection of hydroseres

The transition between water and dry land is particularly valuable to wildlife. Pond and lake edges should be gently sloping to allow maximum development of marsh and should not be made of hard materials such as concrete. Stream valleys should be left undeveloped and as natural as possible. Every effort should be made in redevelopment to remove built structures from stream flood plains and to restore streams to a natural condition.

Acceptance of reasonable standards of public safety

The quest for absolute safety is often highly damaging to the value of sites for wild plants and animals.

People and nature

Education of the public

In order to safeguard wildlife within the city it is often necessary to inform the public about it, to interest people in wildlife and to involve local residents in active measures to protect it.

Availability of study areas for schools

It should be an objective to ensure that every school has access to at least one area on which ecology can be studied either within school grounds or within five to ten minutes walk of the school. This is to be in addition to any area/regional study centre which may be available. Many schools require guidance in the use and management of nature study areas.

Availability of natural habitats for the public

Some area of semi-natural green space should be available to every resident for their quiet enjoyment of wild plants and animals.

2.2 Recommendations

Nature conservation in our towns and cities does not necessarily require radical measures or extensive changes in established local authority procedures, indeed many of the immediate practical steps that authorities can take to promote nature conservation rely simply on recognising the needs of wildlife during the exercise of existing

functions relating to planning, design, development and land management. Our recommendations reflect this need to integrate nature conservation with all aspects of an authority's work. Local authorities may therefore wish to consider their role in implementing the principles, in particular they should –

1 Review existing plans, policies and practices to identify opportunities to further nature conservation during the exercise of all functions relating to urban planning, design, development and land management. In particular, authorities should seek to identify –

- Opportunities to incorporate new measures designed to protect and promote nature.
- Areas of their work which may adversely influence the natural environment and ways in which adverse impacts may be lessened or avoided.
- Existing practices and resources which could be used or adopted to the benefit of the wildlife.

2 Examine internal staffing, departmental and committee arrangements to determine whether they facilitate effective communication and coordination of activities designed to protect and promote nature conservation. Examples of issues that should be considered are –

- Staff awareness of the importance of nature conservation and their individual roles in effecting policies and practices to further the needs of urban wildlife.
- Coordination of activities by officers with specific responsibility for nature conservation.
- Departmental responsibilities and the links between departments.
- Awareness of the Council's responsibility for nature conservation among all key staff and committee members.
- Role of individual committees in promoting nature conservation.
- Procedures for coordinating activities, monitoring and assessing performance.

3 Develop consultation procedures with external statutory and non-statutory agencies, community groups and the voluntary sector. Adopt measures designed to distribute resources and share responsibility for designated tasks with those agencies having specialist skills or expertise. Where appropriate, authorities should seek to support community initiatives and the voluntary conservation organisations through the provision of funding, resources, advice and information.

4 Review available resources and ensure that they are used to greatest effect. Areas of particular importance are –

- Financial provisions (revenue and capital allocations, grant-aiding, external sources of funding – DLG, UDG, ICPP, MSC etc.)
- Technical resources (equipment, information, etc.)
- Available skills among existing staff, councillors, external agencies and voluntary bodies, and training requirements to meet skills shortages.
- Access to specialist nature conservation expertise, either in-house, in collaboration with other authorities or agencies or conservation organisations.

5 Ensure that all sites of high nature conservation value are protected by their integration within the strategic planning process. Designated sites are of particular value and these should be protected as a priority – including all National Nature Reserves, Sites of Special Scientific Interest, Marine Nature Reserves, Local Nature Reserves and sites protected by international conventions. Nationally and locally important sites should be identified and protected within the planning system by the following mechanisms –

- Nature conservation policies and proposals in all structure and local plans.
- Publicly available summaries of the councils plans, policies, proposals and non-statutory plans and policies relating to nature conservation together with a site register or database listing all the important sites and areas.
- Planning application refusals on nature conservation grounds, or where appropriate, planning conditions designed to minimise possible adverse effects of developments.
- Specification in planning and development briefs.
- Consultation with the Nature Conservancy Council at the earliest possible stage if a proposed development may affect a designated site or any other sites of nature conservation significance.
- Where appropriate sites should be purchased or leased to ensure their protection as Local Nature Reserves. Other sites may be protected by management agreements with the owners.
- Develop comprehensive nature conservation strategies based on the results of systematic surveys.

6 Review management procedures for all council owned and managed land. In particular authorities should ensure that areas of ecologically valuable habitat are managed to ensure their continued survival under low maintenance regimes. Management plans should be prepared for all semi-natural habitats owned and managed by the authority. Where appropriate, the wildlife value of existing open spaces should be enhanced. Authorities should develop open space management strategies.

7 Ensure that all measures designed to conserve or create new wildlife resources are fully integrated with the fundamental principles for nature conservation.

Implementing principles for urban nature conservation



3.1 Introduction

As mentioned in Section 1, local authorities have been increasingly active in nature conservation in recent years. A questionnaire survey of local authorities in England, Wales and Scotland confirmed that in general most authorities were involved in initiatives designed to promote nature. The title of the report *Gaining Momentum...* (Tyldesley, 1986) reflects the growth in awareness and interest by an increasing number of authorities, including those in predominantly urban areas. There is however, a marked discrepancy between the achievements of authorities, which points to the need for further efforts to integrate measures to promote nature conservation with all local authority functions and responsibilities.

As the previous section illustrates, the success of measures to protect and promote nature in urban areas depends on adherence to principles which, although not necessarily specific to nature in towns and cities, reflect the demands and constraints which are at a maximum in built-up areas. This therefore raises two essential questions –

- What obstacles and opportunities are there to wider implementation of these principles?
- To what extent, if any, are the principles already incorporated within existing local authority policies and practices?

In this section the results of the consultation exercise with local authorities, professionals and agencies involved in nature conservation, planning, design and land management in urban areas are discussed within the overall context of these two basic questions. The first part reviews the main issues identified by local authority officers which influences the extent to which they take account of the needs of nature. The second part goes on to examine existing local authority practices which may implement the principles.

3.2 General issues affecting implementation

Communication

All branches of science, technology and the professional disciplines have their own terminology defining essential concepts and actions. It is obviously necessary for specialists to use technical

terms when communicating amongst themselves. In the specialist context technical phraseology will convey precise meanings unambiguously and efficiently and in a way that avoids otherwise lengthy explanation. Outside the specialist context, however, technical terms can often be the cause of considerable difficulty; meanings may often be unclear or confused with similar words or phrases having different meanings. This mis-match between the implied meaning and the actual interpretation given to a term by an audience of non-experts is commonly described as the 'jargon gap'.

Urban nature conservation crosses many of the traditional boundaries between the 'environmental sciences' and professional disciplines such as planning and architecture. This may heighten problems of communication where for example a horticulturalist may ascribe a different meaning to the word 'variety' from that implied by the use of the term by an ecologist. The 'jargon gap' therefore represents a potential barrier to the understanding not only of the 'principles' themselves, but also to attempts to communicate on the subject of urban nature conservation between professionals and to lay audiences. This problem was identified by some of the officers contacted as presenting an obstacle which limited the performance of their authorities in respect of urban nature conservation.

The solution to the 'jargon gap' is not difficult to achieve and relies simply on establishing the precise meanings given to words or phrases within the context of their use. This does not require gross over-simplification but simple direct phrasing backed up by examples to illustrate the point being made. This is particularly important in communicating with lay people who will be more responsive and show greater understanding if facts are presented in a straight-forward way.

As a further step in improving communication with the wider public, authorities should aim to support any changes in policy or practice with interpretive material to explain why changes are being made.

For example, the City of Norwich has produced such interpretive material outlining the Council's reasons for changes in grass-cutting frequencies and also on its general community woodland management strategy. This has helped to increase the awareness and acceptance of measures to promote nature among local residents.

Not all attempts to communicate will succeed first time. As an example, the development of a local nature area in one city attracted considerable community support, with the exception of elderly residents in nearby sheltered housing who

steadfastly opposed the project. However as soon as the attractive wildflowers were established the elderly residents asked if they could have a meadow sown next to their homes as well. The lesson learnt here is that effective communication very often requires practical demonstration of the desired end-product.

Organisational structures

The key role of any local authority involved in urban nature conservation must be that of ensuring that policies and resources are deployed in such a way as to achieve maximum benefit. This role is essentially one of co-ordination across three identifiable boundaries; co-ordination between the different agencies participating in managing the urban environment; co-ordination of the various departments and committees within the local authority itself; and co-ordination of individual officers and teams of officers making up the various departments. The fundamental principles dictate that nature conservation should be integrated within all aspects of local authority involvement in planning, designing and managing urban areas. The role of co-ordination should implicitly recognise this requirement.

The most common organisational structure for co-ordinating various agencies, departments and officers is that of the committee. There are many possible permutations for status, membership and remit of committees tackling urban nature conservation.

For example, in Leicester an Ecology Advisory Group has been established to prepare an 'Ecology Strategy' for the City. The specially convened group represents a partnership between officers from Leicester City Council, Leicestershire County Council, the Leicestershire and Rutland Trust for Nature Conservation and the City Wildlife Project. It has been given a wide ranging brief to comment on general issues relating to nature conservation in Leicester, to identify what action is needed, to assist in the preparation of the Ecology Strategy and to oversee its implementation. The officers serving on the Ecology Advisory Group report directly to council committees within the local authority to ensure that its recommendations are given appropriate status within the authority's organisational structure.

In Dudley, the preparation of a Recreation and Open Space Subject Plan prompted the establishment of a Nature Conservation Working Party to link-in the expertise of local voluntary conservation and amenity groups and encourage their participation in the background survey work necessary to derive positive and sympathetic policies and proposals. The Working Party was instrumental in the co-ordination of a survey of sites of nature conservation value conducted by the Urban Wildlife Group. Initially however, the Working Party had no formal standing within the decision making processes of the Council, so in

1985, arrangements were formalised by the establishment of a Nature Conservation Advisory Committee chaired by the Chairman of the Planning and Architecture Committee and comprising representatives from other conservation organisations (including the Nature Conservancy Council) and elected members of the Planning and Architecture and Leisure Services Committee. The Advisory Committee has been given wide-ranging terms of reference to provide advice on Council policies, plans and procedures and to comment on planning applications.

In both Leicester and Dudley as well as in other urban authorities adopting similar measures, a nature conservation committee linking local authority officers and/or elected members with outside agencies and voluntary bodies has assisted in the co-ordination of activities designed to meet pre-determined aims and objectives. These and similar initiatives have shown how the 'principles' can be incorporated within a package of policies, plans and changes in practice in the various authority departments.

Apart from acting as co-ordinating bodies, such committees may also fulfil a second important role, in promoting and communicating the value of nature conservation to elected members. The support and commitment of elected members is a key factor in the wider adoption of measures designed to promote nature conservation (Tyldesley, 1986). Committees are an effective mechanism for securing this support through their role in advising formal council committees, through the active participation of elected members in the work of nature conservation committees and through the extra weight attributable to their findings. Figure 3 gives an example of an organisational structure that would be appropriate for most local authorities involved in promoting nature conservation at a regional as well as sub-regional scale.

Although there may be certain advantages to officer-led initiatives, this is generally less satisfactory, for the reason that while an individual officer or group of officers may have powers to co-ordinate matters of specific relevance to nature conservation, possibly only within one department of the authority, they may have only limited powers to influence general council policies or areas of a local authority's work not directly related to nature conservation. This is not to say that individuals or groups of council officers should not be designated with specific responsibility for nature conservation. In fact this is highly desirable, particularly if the delegated officer has expertise in nature conservation. Many of the more technical and practical issues addressed by the fundamental 'principles' embody a detailed appreciation of quite complex ecological factors. If such issues are to be effectively integrated within local authority practices it is essential that expert ecological advice is available either 'in-house' or from consultants or local conservation bodies.

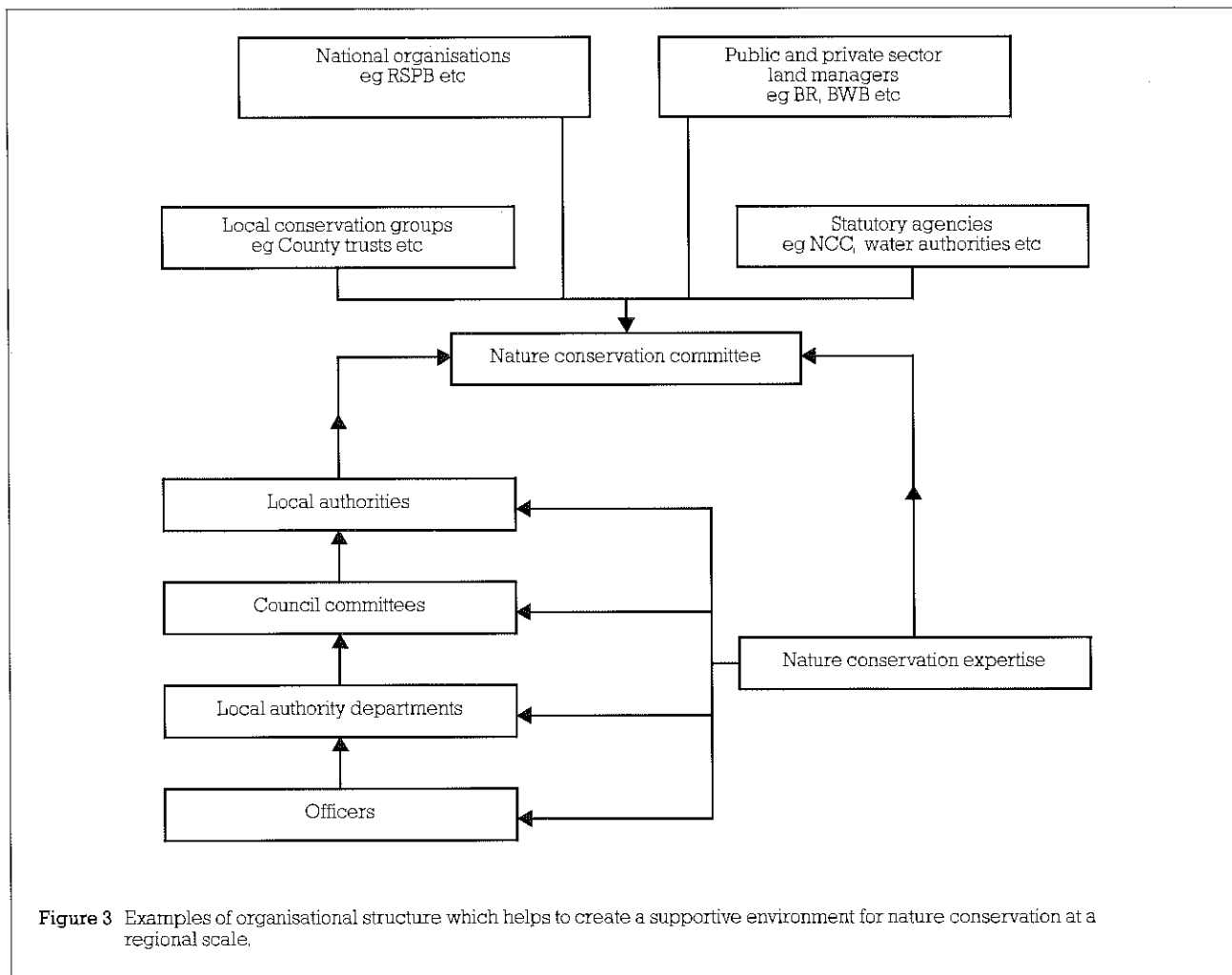


Figure 3 Examples of organisational structure which helps to create a supportive environment for nature conservation at a regional scale.

One common obstacle to further implementation of the principles identified by many of the local authorities contacted was the way in which local councils are structured into formal functional units (typically departments, divisions, directorates etc.). This division is often a necessary feature of a large organisation and is not restrictive where functions such as planning, parks and recreation, technical services and so on, can be readily identified and delineated. However, the resulting division is often inappropriate for nature conservation which may by its nature blend many of the individual functions into one activity. In this respect nature conservation may be seen as being 'multi-disciplinary'. The tendency for local authority departments to focus attention mainly on issues relevant to their primary function aggravates the difficulties involved in securing inter-departmental co-ordination and co-operation and leads to the phenomenon colloquially referred to as 'departmentalism'.

Where appreciable progress towards implementing the 'principles' was reported, 'departmentalism' was not cited as having presented a significant barrier to progress. For those authorities where additional information was given on possible reasons for this absence of departmentalism, two factors emerged.

Some local authorities reported that a positive and

constructive relationship between individual officers from different departments had emerged from co-operation in one or more joint initiatives connected with particular schemes. For example, in Middlesbrough involvement of officers from several different departments in a committee to plan and manage an environmental improvement project (The Martin West Beck Committee) had helped to create a positive and supportive attitude towards nature conservation within the authority as a whole. Similarly in Stoke-on-Trent, participation of different departments in the development of the National Garden Festival site was reported to be a valuable practical demonstration of the benefits of inter-departmental co-operation.

The second reason given for the absence of 'departmentalism' was that the authority had publicly announced its commitment to nature conservation and therefore it was difficult for individual officers to obstruct progress. Whatever the mechanism used to overcome the inevitable problems associated with inter-departmental communication and co-ordination, it is essential in the longer term that local authority actions are founded on common goals and commitments. This also applies equally to neighbouring authorities in larger metropolitan areas.

The attitudes of council officers towards urban nature conservation can have a major impact on the practical implementation of the 'principles'. During the consultation surveys efforts were made to contact not just those officers who had specific responsibility or personal interest in nature conservation within each authority but also a wider cross-section of officers at various levels of seniority and within different departments. From the replies received and interviews conducted it is evident that attitudes towards urban nature conservation fall into four broad categories:

A - those who saw nature conservation primarily as a non-urban activity.

B - those who recognised that nature conservation was relevant in urban areas but that the local authority role was strictly limited to priority issues, typically unemployment, housing, economic regeneration etc. Responsibility for nature was ascribed to national conservation bodies.

C - those who were fully aware of the value of nature conservation in urban areas and were personally keen to promote it but were prevented from taking positive steps by the attitude of their authorities.

D - those who were fully aware and active in promoting urban nature conservation.

There was no discernible pattern in the distribution of respondents between these four categories in terms of local authority type (County Council, District Council, Regional Council, Development Corporation), area (town, city, metropolitan), geographic location (north, south), or seniority (Chief Officer.....Technical Officer). There was evidence to suggest that some respondents falling within the last two categories (C and D) were personally active in the voluntary nature conservation movement or had received formal training in nature conservation related subjects as part of their professional qualification. However other respondents in these two categories confessed to having received little or no formal training but had acquired their interest in nature conservation from other members of their authority, through professional publications or from the general growth in awareness of nature conservation in towns and cities that has taken place over recent years. Respondents falling within category C were almost invariably frustrated by the lack of progress by their authorities to promote nature conservation at a general level. Some admitted that they did try to promote nature conservation within their own area of responsibility. The success of individual initiatives depends on their seniority, the more senior their position the greater the impact that they make on work conducted within their department.

Only a few of the officers contacted perceived nature conservation as an exclusively rural activity. Of these, several reported that their view was a

reflection of the fact that they had not really considered the matter before. The others considered that priorities should be given to nature conservation in those areas most remote from man's activities. Those officers who saw nature conservation as a peripheral matter compared to the more central issues of housing, employment and economic development again were in the minority. No one factor could be identified which explained why they adopted an essentially negative attitude to urban nature conservation. Most were willing to concede that if nature could be promoted without placing demands on resources or without taking priority for land needed for other purposes then it could be integrated within local authorities' work.

It is encouraging to note that the majority of officers contacted adopted a positive view of urban nature conservation. Only in a few instances was personal disinterest by local authority officers highlighted as a specific obstacle to further progress. The extent to which this places a limit on what can be achieved will depend on the seniority of the officers concerned. In all cases, whether there is resistance to adoption of measures designed to promote nature or not, authorities should take time and devote efforts towards promoting nature conservation to all members of the authority. Where necessary training in nature conservation should be provided for staff involved in practical implementation. Creating and sustaining a supportive environment will help to ensure that maximum benefit is gained from an authority's greatest resources – its elected members and council officers.

Such training may be available through the various professional bodies or alternatively authorities may organise their own internal courses. One authority comments: "wishing to promote the ecological approach to design and management, this department has initiated a 12 week day release course for landscape and maintenance staff. This course -The Natural City- was held for the first time last Autumn and is to be repeated again this year."

Awareness of the fundamental principles

All authorities contacted during the survey were asked to comment on the validity of the fundamental principles within the context of their authority's role, and on the ways in which these principles were explicitly or implicitly promoted in the council's activities. There was general agreement that the principles were valid in the context of local authority involvement in urban nature conservation. Several authorities commented that they found the summary of the principles to be a valuable 'yardstick' against which to measure their own performance and would be reconsidering their present involvement in the light of the information supplied.

Most authorities demonstrated that they understood the principles by drawing attention to examples of

schemes or sites which demonstrated practical application of at least one of the principles. The types of schemes or initiatives presented depended to a large extent on the functions of the department. Planning departments tended to focus attention on their involvement in strategic and local plans, planning policies and development control practices. Parks and Recreation departments gave examples of open-space management, landscaping and sympathetic nature conservation management practices. In both cases the examples given were linked to specific principles. Few authorities gave examples of practical implementation of the more general principles which were not readily associated with a specific activity. For example one metropolitan authority in the North of England commented that: "this aim implies the adoption of an inter-disciplinary approach to urban development which we have not yet fully realised. Ecological advice is sought and given to planners and engineers involved in certain new housing developments, so that the design attempts to maximise the potential for habitat creation and minimise the environmental damage. However, a fully integrated holistic approach taking social and economic factors into account is currently lacking." The same authority, commenting on a principle that is more easily placed in the context of the existing local council practices, states: "Most, if not all, in containing uncommon species, communities or habitats have now been identified, and on sites not already protected active measures are being taken to achieve this. Once identified, sites within our control have had management plans drawn up, whilst other sites are monitored to detect any possibly damaging influences." The distinction between aspects of the principles which establish general goals and those which are more closely related to existing practices is an important consideration in the definition of longer term aims and is particularly relevant in the formulation of plans and policies. It is clear from the many replies containing information on the extent of local authority involvement in implementing principles, that those aspects most readily applied in practice are indeed being taken up and implemented. Few authorities however, can be considered to be implementing most or all of the principles. However the vast majority of authorities are aware of the principles even if they have not placed them in the context of their own involvement in nature conservation. It must be assumed, therefore, that the current extent of adoption of practices relevant to the principles is a reflection of the relatively recent emergence of urban nature conservation and consequently the short time for assessment and development of new policies and practices.

The voluntary sector

A wide variety of voluntary bodies are actively involved in nature conservation. The voluntary movement has witnessed a rapid growth in public participation and support at all levels from the small local action groups to the established national organisations such as the Royal Society for the

Protection of Birds. Their role in urban areas may vary but generally includes one or more of the following –

- Ownership and management of land for the benefit of wildlife, the environment, recreation and/or the local community.
- Education of the public.
- Providing advisory services on matters relevant to the natural environment.
- Providing practical and technical assistance.
- Liaison between the local community and the statutory sectors.
- Funding, raising and supporting local or national initiatives to promote nature and the environment.

Most local authorities reported at least some links with voluntary organisations. These links varied from area to area depending on the general attitude of the authority towards nature conservation and the involvement of the voluntary sector and on the nature of the voluntary organisations active in their area.

For example one London Borough which places particular stress on community involvement in all of its activities, states in a report setting out its priorities for nature conservation: "that unless staff resources are redirected from other priority work the officers' function must be limited to that of co-ordination for the foreseeable future. The report indicates the strong role of the voluntary sector in this field of activity and it is, therefore, suggested that the Council's role should be seen as enabling the voluntary bodies to make the most positive contribution they can." Many authorities commented on the valuable role of the County Nature Conservation Trusts, and more particularly on the contribution made by urban nature conservation groups. The relatively recent development of the latter means there has not been sufficient time to assess the full impact that they may have on local authority awareness and attitudes. As the list of contacts in the voluntary urban nature conservation movement in Appendix 3 demonstrates, public participation and interest in urban wildlife groups is not limited to the larger metropolitan areas but extends to many smaller cities and towns.

In those towns and cities where they have been established for a number of years, most notably London and Birmingham, attempts to work closely with local authorities have been generally successful. This is not to say that there have not been difficulties. Where problems have arisen, they may be the consequence of misunderstandings between the two parties, or it may have proved difficult to reconcile conflicting demands. However, such problems are not impossible to overcome

through effective liaison and sensitivity and should not be allowed to block otherwise valuable partnership initiatives. Building links with the voluntary sector should be an integral feature of local authority measures to promote nature conservation. Authorities should seek to support voluntary bodies and community initiatives wherever practicable through provision of information, finance, specialist expertise and advice, resources and positive encouragement.

3.3 Principles in practice

Local authorities are being encouraged to adopt policies and practices which take account of nature. This report has so far concentrated on establishing a general framework of principles for nature conservation in towns and cities. The question: "to what extent, if any, are these principles incorporated within existing local authority policies and practices?" is of fundamental importance if available resources are to be targeted effectively. The information obtained from local authorities participating in the survey has helped in defining elements of good and bad practice which may be valuable in providing an answer to this question and in pointing the way forward. However it should be acknowledged that 'good and bad' as defined by nature conservation criteria may not always coincide with 'good and bad' against other criteria.

Furthermore the rate of progress within individual authorities will vary according to the demands and constraints under which each council operates under. As one officer in a borough council has commented: "the town is blessed with some very fine examples of good practice in nature conservation. There are, though, still many examples of bad practice... The reasons for the slow rate of change towards a more sympathetic approach to nature conservation by the Council are many and complex. They are not often understood by many of the professionals looking in from the outside who castigate the authority for its bad practices. However, I firmly believe the changes we are seeking are happening at an increasing rate and will continue to do so as the public and local politicians become more concerned about nature conservation within the town". The principles themselves represent a general framework for action. The responsibility for implementing the separate principles may fall to different agencies, departments and/or professionals as shown in the two matrices in Figures 4 and 5. The first (Figure 4) links various agencies and the key functions that they perform with the principles. The second (Figure 5) identifies principles most relevant to the role of various professionals working within local government. It is important that each recognises the contribution that they may make within their own area of responsibility and seeks to assess their existing role and the extent to which they may

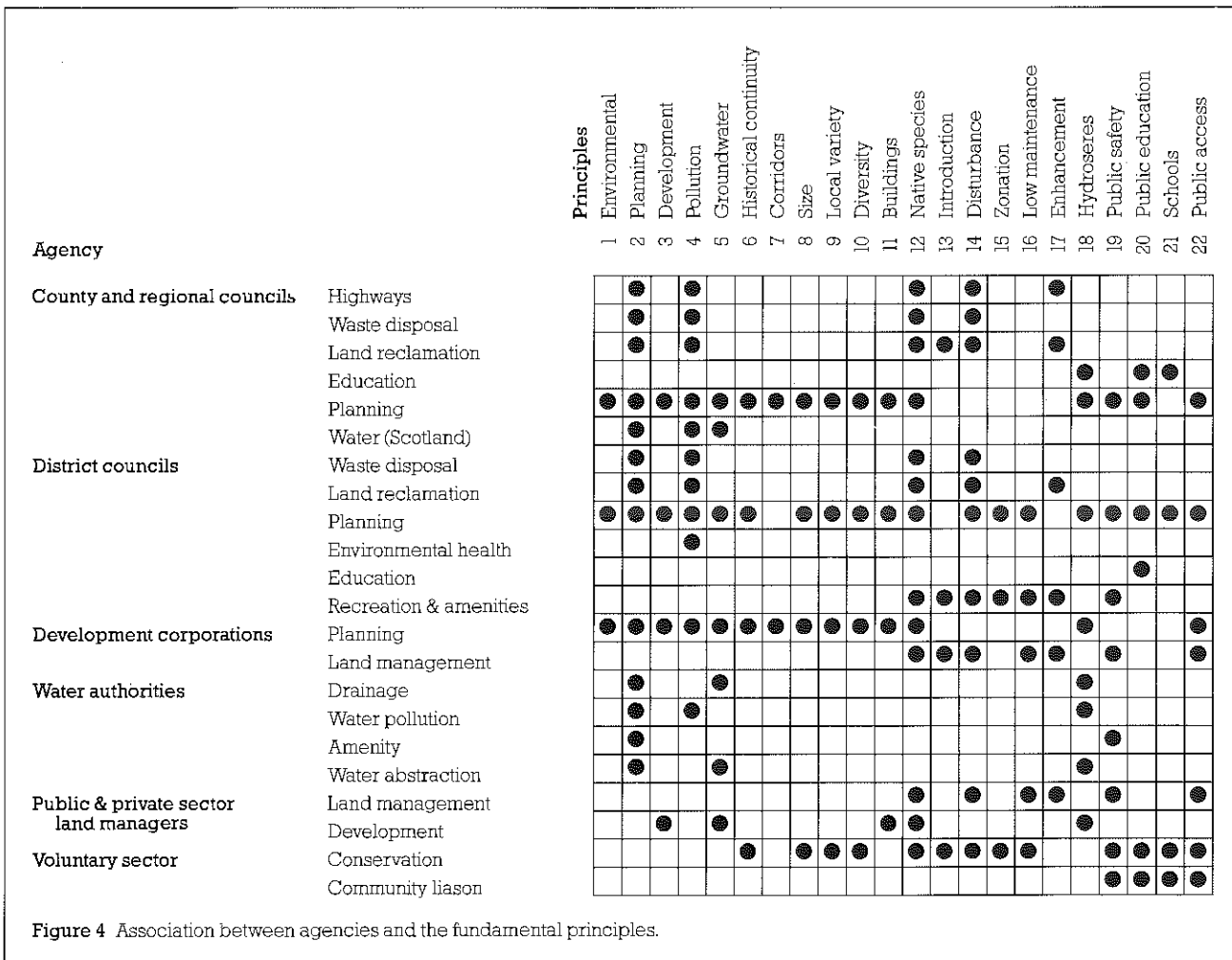


Figure 4 Association between agencies and the fundamental principles.

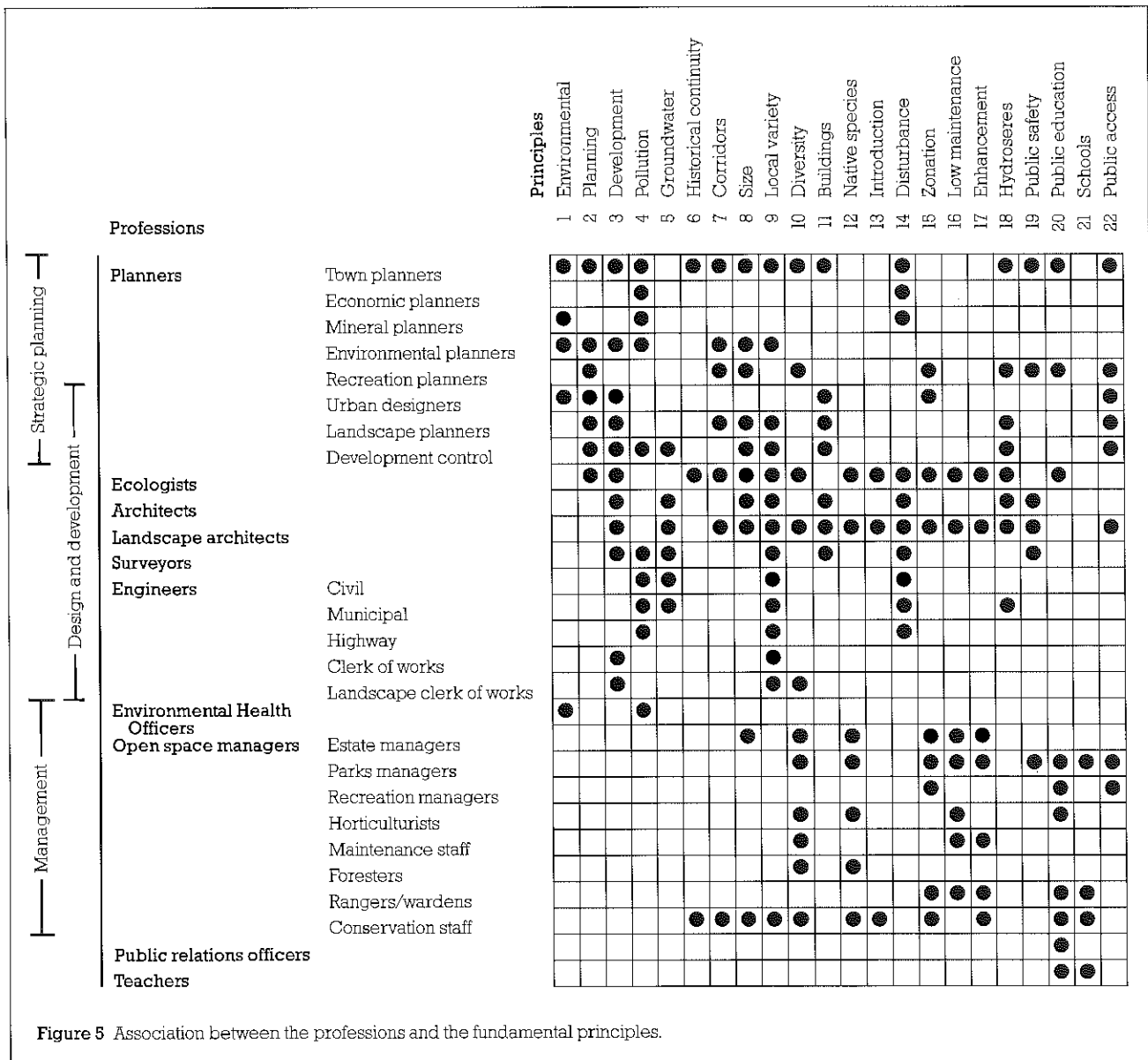


Figure 5 Association between the professions and the fundamental principles.

contribute to further implementation.

Planning and design

The strategic planning system provides a unique opportunity for local authorities to develop comprehensive policies for nature conservation at both regional and sub-regional scales. The policies contained in structure and local plans provide a planning framework for a defined area which may influence major land uses and their inter-relationships with the natural environment and utility systems. Local plans may also contain detailed planning proposals for defined areas or specified topics. Authorities should promote nature conservation in such plans by including clear, precise policies which declare the councils commitment to nature conservation, protect areas of importance for nature conservation and enhance the value of sites for wildlife and local communities. At a minimum policies should ensure the protection

of all statutory sites i.e. SSSIs, National Nature Reserves, Local Nature Reserves, Marine Nature Reserves and sites protected by international agreements.

Councils should also consult with the Nature Conservancy Council and other conservation organisations during the preparation of structure and local plans. Many local authorities submitted examples of plans and policies protecting and promoting nature and furthering the implementation of the principles.

A typical example of a policy statement designed to protect statutory sites is contained in the revisions of the Norwich Structure Plan: "Development will not be permitted either in or near to a site of special scientific interest, national nature reserve, or local nature reserve which will damage its scientific interest. Particular consideration will be given to the lists of activities damaging to each SSSI drawn

up by the Nature Conservancy Council under S.28 of the Wildlife and Countryside Act, 1981." Policies on management and management agreements may also be incorporated within structure plans, for example, "Natural habitats which are not statutorily protected particularly those which are rare, vulnerable or diminishing, will be safeguarded by –

- Controlling new development.
- Voluntary agreements over agricultural, forestry or other operations outside development control.
- Improved control and management where existing arrangements are unsatisfactory." [Policy EP.11 Lothian Structure Plan]

Structure plans by their nature are restricted to strategic land use issues. With the abolition of the Metropolitan County Councils, the strategic planning role will be continued through the mechanism of Unitary Development Plans. The preparation of Unitary Development Plans will present opportunities to plan for the protection and promotion of nature across areas larger than a single district. The policies contained in all strategic plans should be concise and provide guidance on nature conservation matters at a regional or sub-regional scale.

The local planning system offers further opportunities to protect and promote nature conservation interests. In this respect the following example of a policy designed to protect ecologically valuable sites and promote management of natural habitats illustrates how the principles can be incorporated directly within council policies:

"The Council will identify ecological corridors and natural open spaces which are of local significance, and are sites which are for the enjoyment or conservation of nature. Within these sites, sites adjoining ecological corridors, and in statutory local nature reserves or sites of special scientific interest (SSSIs), there will be a presumption against any development which would diminish the natural habitat. The Council will seek statutory protection for sites of ecological importance." [Policy UD42 London Borough of Camden (Proposals for the alteration of the District Plan)]

Barrow in Furness Borough Council have produced a comprehensive group of policies for the protection of sites of local natural history interest based on the results of detailed ecological surveys of the Borough. The surveys identify eighteen sites of local importance for their natural history interest. Their presence is taken into account in development control and Local Plans. The current policy states —

"The locations identified in the document *A Policy for sites of Local Natural History Interest* are considered to be the Borough's areas of prime

natural history importance which the Local Planning Authority seeks to conserve in exercising their development control powers. Management measures which seek to conserve the areas' interest will be encouraged." More detailed policies are specified for four of these sites which are designated as Sites of Special Scientific Interest. Furthermore, the Council have adopted a 'Countryside and Informal Recreation Strategy' which aims to develop a network of green spaces for local residents to enjoy. With a population of just over 70,000, the lead taken by Barrow-in-Furness Borough Council must point the way for nature conservation in small to medium sized towns. Local plans can also be used to put forward policies on management of natural habitats; "Where the Council is responsible for management of open space or where it can influence the management of land not in its ownership, the conservation and/or re-creation of semi-natural habitats will be promoted and encouraged." [Policy 32, Shrewsbury Urban Area Local Plan]

The value of these and many other nature conservation policies contained in structure and local plans is not to be underestimated. However nature conservation is often closely interlinked with many aspects of the way in which towns and cities are designed and managed. For this reason it is difficult to guard against negative impacts resulting from policies contained in other general sections of the plans. For example industry, recreation, minerals extraction, waste disposal, land reclamation and urban renewal can all have indirect impacts on natural processes and the environment in general. Possible conflicts should be identified. Local authorities should give serious thought to the possibility of promoting nature conservation through the mechanisms of subject plans, non-statutory plans or planning statements based on the results of systematic surveys of wildlife resources.

The first such urban nature conservation strategy was produced by the former West Midlands County Council. The West Midlands Nature Conservation Strategy, a non-statutory plan, was based on the results of a comprehensive habitat survey of the County which identified over 20,000 habitat sites. The aims of the strategy were as follows—

- To ensure that all residents in the County have reasonable access to habitats with wildlife interest.
- To protect and enhance a basic network of open space and wildlife corridors.
- To improve the suitability of the County's undeveloped land for wildlife.
- To protect rare habitats.
- To protect the habitats of nationally rare species.

- To promote the significance and encourage the consideration of the County's wildlife.

The strategy proposed a basic wildlife network consisting of large areas of wildlife habitat (wildlife reservoirs) and open space/wildlife corridors together with links and stepping stone open spaces. The strategy also identified areas where residents have no opportunity to visit a local site with wildlife interest exceeding half a hectare within a kilometre of their homes. It can be seen that this strategy establishes a framework for wildlife protection and promotion in keeping with the fundamental principles. Comprehensive strategies have now been published or are being prepared for most of the metropolitan county areas.

Many metropolitan district councils and some non-metropolitan districts contacted during the survey commented that they were either in the process of producing more detailed strategies covering their authority's area or were fully committed to developing such strategies in the near future. The content and form of these strategies ranged from a simple collection of generalised policies and proposals to comprehensive nature conservation plans based on detailed habitat surveys and species data. Whatever the content and form, district level strategies should take account of the need to consider nature conservation issues which cross their boundaries, particularly in metropolitan areas. The compilation of information on habitats, species and other environmental factors should be seen as a priority during all stages of developing nature conservation policies and in designing appropriate practical measures. Some of the councils contacted had initiated or were collaborating with other nature conservation organisations in the production of habitat surveys for their areas. For example the London Borough of Camden commissioned the London Wildlife Trust to conduct a survey of the existing and potential wildlife habitats of some vacant sites and open spaces in the borough. Others commented that they would develop databases when time and resources were available and in the meantime would rely on the information contained in existing site registers. If the fundamental principles are to be effectively implemented it is essential that comprehensive habitat and species data is available and readily accessible to local authorities. It is difficult to see how local priorities and longer-term objectives can be identified in the absence of this basic information.

Local authorities should integrate information on all sites of nature conservation value (including statutory sites, sites protected under international conventions and other sites of local value) into the planning process. Figure 6 shows how in practical terms, the fundamental principles for nature conservation can be promoted through the development control system. It can be seen from Figure 5 that when considering proposals for development, authorities should refer to site schedules which at a minimum should contain a

basic list of SSSIs together with maps of the areas concerned. The Nature Conservancy Council notifies authorities of the location of all SSSIs and may also provide details of the special interest of a site or the operations likely to damage species or habitats within the site boundary or an neighbouring land. Local authorities are required to give at least 14 days notice to, and consult with the Nature Conservancy Council before determining planning permission for the development of land in an SSSI. Authorities may also consult with the Nature Conservancy Council on proposals for development which may influence an SSSI or a site that has been identified as being of SSSI status but which has not yet been declared as such.

Sites of value for nature conservation may be protected by refusal of planning permission or granting planning consent subject to planning conditions which may limit the impact of the development. This is particularly important where sites contain species protected under Schedules 1, 5 and 8 of the Wildlife and Countryside Act, 1981. Department of the Environment Circular 24/82 gives details of the measures which should be adopted by local authorities to ensure protection for these species and their habitats. It is interesting to note that none of the authorities responding to the survey request for information on practices which furthered the needs of wildlife drew attention to their role under Part 1 of the Wildlife and Countryside Act 1981.

Inclusion of nature conservation conditions in Planning Briefs is also an important area where authorities can prevent loss or damage to important sites or features of value. In the Planning Brief for Ellesmere Road in Shrewsbury, the local Borough Council included the following statements designed to protect a valuable areas of sedge fen habitat on the Old River Bed, SSSI: "In view of its ecological importance the NCC has indicated the desirability of establishing a 'buffer zone' between the SSSI and the proposed development..."

"It is considered that a continuous belt of informal open space, of varying width (but not less than 30 metres) be allocated along the eastern boundary..."

"Landscaping details for the 'buffer zone' along the eastern edge of the site will have to be discussed in consultation with the NCC"

In Edinburgh, proposals for development for valuable wetland habitat were refused on the grounds of the nature conservation value of the site. In order to ensure its long term protection the local council acquired the site through compulsory purchase order for development as a non-statutory local nature reserve (see Appendix 2 - Straiton Pond). In Bristol, planning consent was granted for development of an important area of meadowland, however the council managed to gain the co-operation of the major developer in the retention of areas of the meadow around the fringes of the site

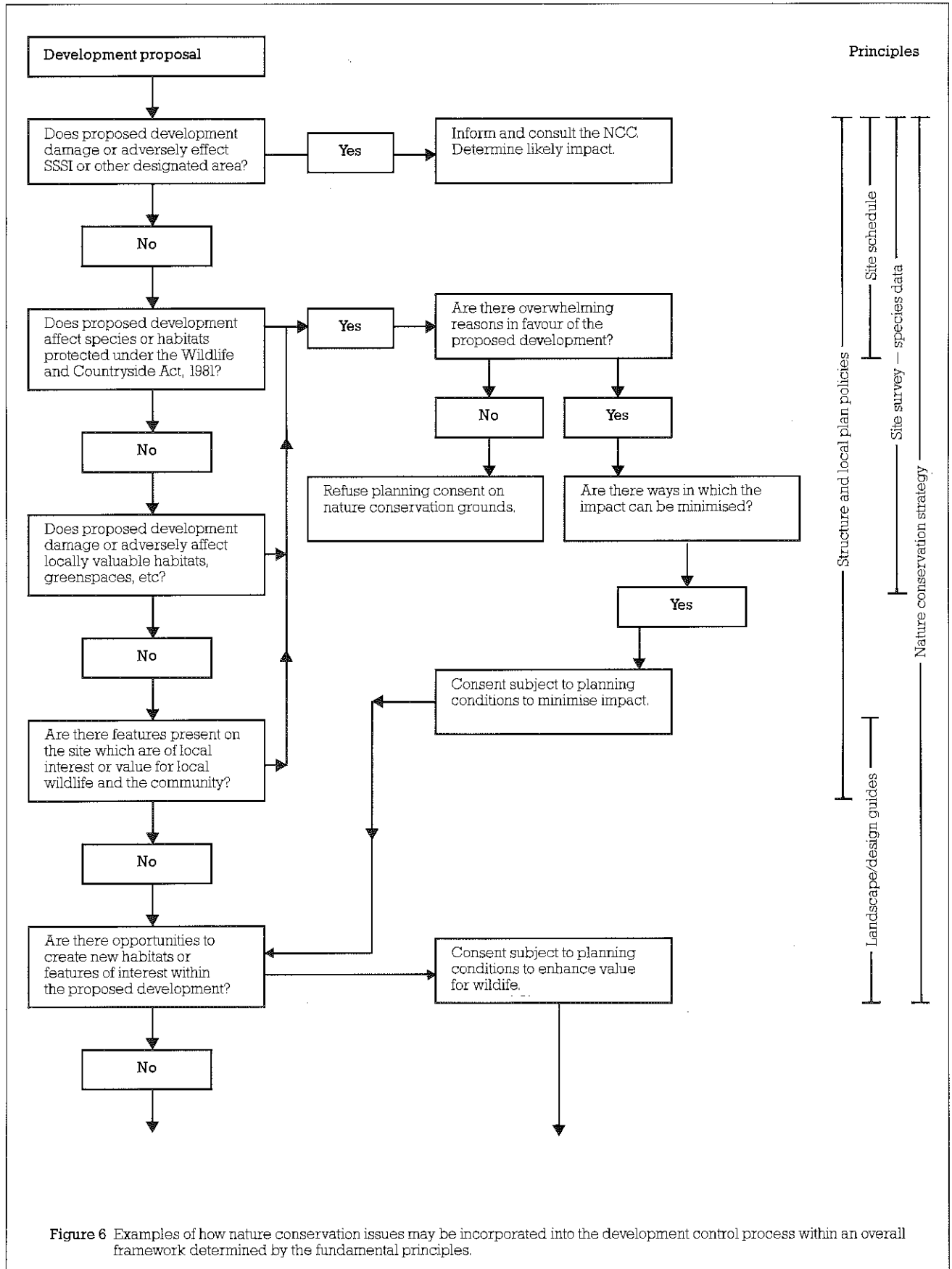


Figure 6 Examples of how nature conservation issues may be incorporated into the development control process within an overall framework determined by the fundamental principles.

Table 2 Examples of projects developed through joint action by local authorities and local voluntary/community groups.

Ralley Nature Garden	Owned by Leicestershire County Council and developed by the City Wildlife Project with support from Leicester City Council.
Watermead Ecological Park	Leased by Leicester City Council to Leicestershire and Rutland Trust for Nature Conservation, managed by the City Wildlife Project.
Blackley Forest	Owned by Manchester City Council and managed by Community Enterprise Programme and local residents.
Hartcliffe Community Park Farm	Community project supported by Bristol City Council.
Stockwood Open Space	Area of public open space owned by Bristol City Council and managed by Avon Wildlife Trust.
Rose Hill Quarry	Owned by Swansea City Council and developed by Mount Pleasant Residents Association as an environmental, educational and recreational area.
Project Kingfisher	Joint initiative by Birmingham and Solihull Councils, the Urban Wildlife Group, Warwickshire Trust for Nature Conservation, Severn Trent Water Authority, local volunteers and residents to improve sections of the River Cole and develop a walkway.

and for the landscaping of the site in keeping with the principle of using native species (see Appendix 2 - Hawkfield Meadow). Had a comprehensive habitat survey been available when the land was initially designated for development, this site would probably have been identified and protected. In the event the value of the meadow was recognised too late to prevent its loss. Bristol City Council commented that they would be keen to incorporate appropriate measures to prevent this situation from arising in the future. Many other authorities commented that where appropriate, planning controls would be used to further the protection and development of nature conservation. Some authorities also gave examples of other measures adopted to protect nature conservation interests. For example in Camden, a council housing development scheme has been designed to retain existing areas of ecologically valuable woodland habitat. The Russell's Nursery site will incorporate areas of leisure woodland and a woodland nature reserve. None of the authorities contacted identified examples of schemes where habitats had been incorporated on or within buildings. Several commented that they did take account of the impacts of developments on the physical as well as the natural environment. For example in Redditch, New Town industrial and residential developments have been carefully designed to make the most of the natural and physical features of the area (see

Appendix 2).

Some authorities were promoting the value of nature conservation during development to local developers. The London Borough of Sutton had published a *Code of Practice for Nature Conservation as an input to the Development Process*, setting out basic guidelines for new developments. In Dudley, a Nature Conservation Award Scheme is being promoted by the local Council to encourage the private sector to adopt a more ecologically sensitive approach to development.

Several councils had used powers under Section 21 of the National Parks and Access to the Countryside Act 1949 to declare sites as Local Nature Reserves, e.g. Dudley - Saltwells LNR - and Camden - Camley Street LNR - see Appendix 2. Some authorities reported that they were managing land as non-statutory local nature reserves (for example Straiton Pond in Edinburgh and Lower Spennard Bird Sanctuary in Kirkcaldy - described in Appendix 2). The declaration of statutory local nature reserves is an important way of ensuring that the site is protected permanently. Informal nature reserves are inferior in this respect. All councils should consider declaring valuable local sites as LNRs. Leasing of sites was also identified as a means of furthering their protection and management. For example, the London Borough of Southwark has arranged to lease several sites to nature conservation bodies for management as community nature parks. Examples are Sydenham Hill Wood, parts of which are leased to the London Wildlife Trust and Lavender Pond, which is leased to the Trust for Urban Ecology. Southwark also grant-aids the nature conservation groups managing the two sites.

One particular issue raised by several officers working in metropolitan authorities was the need to take account of nature conservation during the reclamation of derelict and neglected land. Many sites abandoned after former industrial use have developed interesting plant and animal communities which can be destroyed during the restoration of the site. In Manchester, for example, a large derelict land reclamation scheme at Clayton Vale has involved the treatment of over 40 hectares of shale, pulverised fuel ash and domestic refuse tips. Some small areas of the site with well developed semi-natural habitat have been left undisturbed and reclaimed areas have been landscaped using native trees and shrubs. Minerals exploitation may also present opportunities to create new wildlife habitats including lakes, wetlands and rock faces. This should be taken into account during the planning and restoration of such sites.

Public access to and enjoyment of nature was given a high priority by those councils who were active in promoting nature conservation. Examples of some of the community projects which are supported by local authorities are briefly described in Table 2. Many other examples were brought to the attention

of the researchers during the survey and it is encouraging to see the success that has been achieved over a comparatively short time period since many of the projects were initiated.

Land management

As major land owners councils have a responsibility for the protection and promotion of wildlife through their functions connected with land management. First and foremost they have a duty to ensure that where they own and manage areas of semi-natural habitat, maintenance operations are carefully planned to take account of the particular ecological requirements of different plant and animal communities. Secondly, they have a more general responsibility to consider their approach to the design and management of all urban open spaces and to seek to enhance their value for wildlife.

The majority of councils contacted expressed interest in the recent developments in naturalistic planting and maintenance techniques and many were clearly willing to evaluate their possible role in the field. As one district council officer commented:

"Whilst the Authority's contribution to nature conservation is restricted at present..., my environmental section is most interested in expanding its current practices to encompass any developments that will enhance nature conservation within both urban and rural situations." Experience has shown that changes in long established practices, however, should be carefully planned and co-ordinated. Even where nature has been promoted from the outset of a new development, success has depended on a thorough understanding of the natural processes operating and the precise management requirements needed to achieve long term aims. The benefits of taking a systematic approach are demonstrated in some of the recent New Town developments. The history of the design and development of Oakwood near Warrington points the way for creation of natural habitats within new residential and industrial areas (Tregay and Gustavsson, 1983). An example of good practice in planning for nature in land management in established urban areas is the Norwich 'Green Plan'. The plan sets out a general framework of policies and practical projects combined with a programme of public education and participation. Among the proposals for policies put forward by the Norwich strategy are statements designed to demonstrate the Councils commitment to sensitive land management: "to revitalise neglected areas of the City's landscape, e.g. woodlands, wetlands, and areas of waste ground and, in doing so, to involve local community groups whenever possible –

- To ensure that the City's woodlands are properly managed in order to ensure their continuity and minimise conflicts between nature conservation and recreational use.

- To ensure that a healthy, balanced population of trees exists within the City at all times.
- To identify, protect and, where appropriate to enhance important habitats and areas of ecological interest. The Council will consider, as part of this process, the declaration of Local Nature Reserves." These proposals set a clear framework for land management practices in line with the fundamental 'principles'. To oversee implementation of the Green Plan, Norwich have formed a 'Green Plan Team' consisting of officers from the City's Planning, Amenities, Housing and Environmental Health Departments. The Team's role is "to translate the statements of intent contained in the Green Plan document into practical policies and projects". The authority also plans to establish a forum for local voluntary groups and others interested in contributing to the development of a comprehensive nature conservation strategy.

A similar initiative by Bristol City Council puts forward comprehensive policies and proposals for the planning and management of land in a report entitled "Open Space in Bristol". Of the policies advocated in the strategy, the following relate specifically to nature conservation: "In relation to the City's landscape generally, the objectives of policy will be –

- To conserve.
- To ensure that appropriate opportunities are provided within the City's Urban Landscape Areas for compatible types of outdoor recreation, for nature conservation and for wildlife."

"Co-operation and consultations will continue to be undertaken with Avon Wildlife Trust on nature conservation aspects and schemes generally in relation to open space, including, where appropriate and necessary, proposals for the identification, and management by the Trust, of Local Nature Reserves and Nature Trails."

One aspect of local authority land management practice which has been given considerable prominence over recent years is the reduction of mowing frequencies on highway verges. The primary motivation for this change in management practice has been one of cost. However as a recent publication by the Royal Society for Nature Conservation illustrates it is possible to enhance the value of verges for wildlife as well as contributing to cost savings (RSNC, 1986).

Initiatives designed to promote sensitive design and management of open spaces need not focus simply on local authority owned and managed land. The London Borough of Sutton have produced a Code of Practice for Nature Conservation within landscape maintenance procedures. The Code of Practice is designed not only to guide the enhancement of council land but is promoted to

other public bodies who own and manage land and also to developers and the general public.

Some authorities reported that they were in the process of preparing, or had published, management plans for sites under their ownership or control. A management plan is an extremely valuable tool, not only because it sets out the present status of the site and details of management procedures required to ensure its protection or enhancement for wildlife, but also because the process of preparing such plans focuses attention on the key issues relevant to the ecology of the site and local authority maintenance practices. For example the draft Management Plan prepared for Risley Moss sets out a clear framework for the future management and enhancement of the many areas of sensitive habitat on the site (Appendix 2). All authorities should consider preparing such management plans for green spaces under their control. The Nature Conservancy Council or other conservation organisations should be approached for advice if 'in house' nature conservationists are not available to the council.

Mention has already been made of the need for adequate training of staff directly involved in nature conservation activities. This applies to all staff connected with the management of land and particularly to those staff directly involved with maintenance of natural and semi-natural habitats.

Creation of nature study areas for schools was referred to by some authorities as an area where progress had been made. Hounslow, for example, had prepared a detailed practical guide showing how schools could prepare their own nature study area and plan for their integration with curriculum activities. Others had participated directly in the design, construction and management of such areas (e.g. St Laurence's, see Appendix 2). Several authorities had created or adapted one or two key sites for the provision of centralised facilities for natural history education. For example, Saltwells LNR and Risley Moss (both described in Appendix 2) provide valuable educational resources accessible by local schools.

Assessment

This report reviews the main factors which influence the extent to which the "fundamental principles for nature conservation in towns and cities" are taken into account by local authorities. The findings of the consultation exercise suggest that there is general agreement on their scientific and practical validity. Given the relatively recent emergence of the movement towards promoting wildlife in towns and cities it is surprising that some local authorities have already taken significant steps towards the ultimate goal of the 'natural city'. However, the findings also indicate that while many authorities can identify one or more ways in which their existing practices promote nature conservation, there is still a long way to go before all of the principles are incorporated within the scope of their routine functions.

Understandably much of the effort to date has been focussed on measures designed to produce the most 'visible' results. For example 'greening' semi-derelict areas or creating nature parks. The justification for concentrating efforts on producing demonstrable results in order to gain wider support for nature conservation is not disputed. Most established urban areas were developed largely in opposition to natural processes and environmental factors. In the medium term, measures designed to bring cities back into line with nature should include more fundamental changes designed to restore natural processes. Local authorities should, therefore, avoid the temptation to concentrate solely on short-term cosmetic treatments.

An analysis of the wealth of information given by local authorities during the consultation exercise confirms that general local authority involvement in nature conservation is indeed "gaining momentum". Local authorities are increasingly recognising their responsibility towards wildlife, the urban environment and above all to the people who live in our towns and cities.

Progress within different local authorities is understandably proceeding at varying rates. Local authorities face widely differing problems and have to work within differing resource constraints. Most, however, have managed at least some progress towards implementing the principles, if only on a limited scale. There are a small number of authorities who still appear to be unaware or unsympathetic to the needs of wildlife and prefer to concentrate their resources on creating jobs, new housing and economic growth or regeneration. These aims should not be used as a reason for inaction. Indeed, nature conservation may actually help to create jobs, contribute to pleasant and attractive surroundings and improve the

environment, which in turn may help to stimulate the local economy and so attract new investment.

There are some local authorities who have so far made what can only be described as token gestures, either as changes in one or two areas of practice, or in the development of a small number of showpiece sites. It is hoped that in such cases their commitment to urban nature conservation will develop to the point where they recognise the need to reassess their role in implementing all of the 'principles' over the whole range of their functions.

One of the most effective mechanisms which authorities can use to target their resources and develop internal commitment towards promoting the needs of wildlife is the development of nature conservation strategies or plans covering the whole range of their functions. The process of developing comprehensive policies and practical objectives which address the needs of wildlife and the local community necessitates detailed assessment of the positive and negative impacts of existing policies and practices. In many cases quite ambitious long-term objectives can be realised through the incremental effects of relatively minor changes in existing practices. Nature conservation strategies are one of the best ways of ensuring that all such actions are co-ordinated and integrated with the normal work of all departments.

There are many potential obstacles to adoption of wider measures designed to promote nature which reluctant authorities, departments or officers may use to support a policy of minimum involvement. However as many authorities have shown such obstacles are rarely, if ever, insurmountable. Communication, or rather the lack of it, is identified by some as a potential barrier to progress. The need to establish links between individual officers, departments, authorities and outside agencies may be a daunting task when first faced. Whilst achieving effective communication across all of these organisational boundaries may take time and patience, once common aims and objectives are established rapid progress can be made. The setting up of committees specifically to co-ordinate nature conservation activities can make a considerable contribution in this respect. Joint nature conservation committees may also help to declare a local authority's commitment to wildlife both internally to elected members, departments and staff and externally to other agencies and the general public. One of the main priorities of such committees should be to appraise current local authority practices and to identify those areas where progress can and should be made. The development of nature conservation strategies for 'whole cities' is a valuable starting point for getting

local authority departments, conservation groups and other agencies to build links with each other and work towards common objectives in partnership rather than in conflict.

Attitudes towards urban nature conservation vary considerably from what could charitably be described as the disinterested to those officers who are extremely enthusiastic and committed. The majority of officers contacted during the project were aware of nature conservation and its potential value in the urban environment. Few felt however that they were fully exploiting the opportunities to further nature within their area of responsibility. In part this may be due to the general attitude to nature conservation within their local authority and particularly among their senior officers and/or colleagues, but many officers also commented that there was a lack of information and guidance on nature conservation in general. Training needs and availability of training resources should therefore be reviewed by all authorities as part of their general programme of nature conservation promotion. Where internal facilities and resources are inadequate, authorities should take active steps to ensure that solutions are found either through collaborative training exercises with local education establishments, conservation groups or professional bodies, or through distance learning programmes.

Access to nature conservation expertise is often cited as an important requirement if local authorities are to fulfil their role effectively. This expertise can be provided 'in-house', through collaboration with local conservation organisations or through joint initiatives with other local authorities. What is possibly more important however, is that local authorities recognise when and where such expertise is required and are prepared to take account of advice given irrespective of its source.

The voluntary sector has an important role to play in urban nature conservation. As many of the more active local authorities have found, partnerships with nature conservation and local community groups may be mutually beneficial and may help to achieve objectives that are difficult to reach by working in isolation. Nevertheless local authorities should guard against exploitation of voluntary groups and should aim to provide practical support for their activities (wherever possible).

The long-term prospects for implementing the fundamental principles are encouraging, given the rapid progress already being made by leading authorities in the field. Many innovative initiatives have been identified which prove that local councils can do much to further nature conservation, provided that they take account of basic ecological principles. Advice on nature conservation given by the Department of the Environment, the Nature Conservancy Council, national conservation organisations and county trusts can do a lot to strengthen local authority awareness and implementation of these principles.

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Appendix 1 Glossary

Adaptability The potential for adaptation.

Adaptation The process of adjustment of an individual organism to environmental stress.

Adjustment The functional response of an organism to stimuli.

Annual Having yearly periodicity.

Balance of nature The state of equilibrium in nature resulting from the constant interaction between organisms and their environment.

Biomass Total weight of all living matter in a particular area or habitat, often expressed as grams of organic matter per square metre.

Biome A community of plants or animals extending over a large natural area, a major regional ecological community, for example, a tropical rain forest.

Biosphere The part of the Earth and its atmosphere which is capable of supporting living organisms.

Biota The total flora and fauna of a given area.

Biotic Relating to life or living organisms.

Biotope The smallest geographic unit of the biosphere or of a habitat that can be delimited by convenient boundaries and is characterised by its biota.

Buffer species A plant or animal acting as an alternative food supply for another organism and thereby buffering the effect of the predator on its normal prey.

Climax A more or less stable biotic community which is in equilibrium with existing conditions and which represents the terminal stage of an ecological succession.

Climax species Any plant characteristic of a climax community.

Colony A group of organisms that have recently become established in a new area or that are occupying a particular site.

Community Any naturally occurring group of different organisms sharing a particular habitat, interacting especially through food relationships while being relatively independent of other groups.

Competition The simultaneous demand by two or

more organisms or species for an essential common resource that is actually or potentially in limited supply.

Conservation The planned management of natural resources, the retention of natural balance, diversity and evolutionary change in the environment.

Corridor A continuous area of open space facilitating the movement of wildlife through the urban environment.

Creative conservation The management of land to enhance or enlarge the nature conservation resource by creating new areas of nature conservation interest.

Diversification An increase in the variation exhibited by a population or community over time.

Diversity A measure of the number of species and their relative abundance in a community.

Dominance The extent to which a given species predominates in a community because of its size, abundance or coverage, and affects the fitness of associated species.

Ecological niche see 'Niche'.

Ecology The study of living organisms in relationship to one another and to their natural environment.

Ecosphere The biosphere and all the ecological factors acting on living organisms contained within it.

Ecosystem A community of organisms and their physical environment interacting as an ecological unit.

Ecotone The boundary or transitional zone between adjacent communities or biomes.

Ecotope A particular habitat type within a larger geographical area.

Endangered species Generally fauna and flora likely to become extinct due to vulnerability from pressure on highly specialised habitats, direct exploitation by man, threat from other species or a combination of these factors.

Endemic Native to, and restricted to, a particular geographic region.

Food chain A sequence of organisms within a

community through which energy is transferred by feeding. Energy enters the chain via primary producers (mainly green plants) passes on to herbivores and then to carnivores.

Flora The plant life of a given region, habitat or geological stratum.

Green desert An area of sterile grassland with "lollipop" trees, often exotics which often support few lifeforms.

Habitat The locality, site and particular type of local environment occupied by an organism.

Hydrosere An ecological succession commencing in a habitat with abundant water, typically on the submerged sediments of a standing body of water.

Indicator species A species, the presence or absence of which is indicative of a particular habitat, community or set of environmental conditions.

Indigenous Native to an area.

Landscape or amenity conservation The safeguarding for public enjoyment of scenery or landscape by preservation and enhancement of existing facilities and the provision of new facilities.

Native species Species originating in that area.

Natural history The study of nature, natural objects and natural phenomena.

Natural selection The (theoretical) agent of evolutionary change by which the organisms possessing advantageous adaptations in a given environment produce more offspring than those lacking such adaptations.

Nature conservation The preservation, management and enhancement of natural plant and animal communities and occasionally modified vegetation, as representative samples of their kind.

Niche A place in the whole ecosystem which provides all the living needs of a species, that species being much better adapted to fit that niche than any other species.

Nurse species A fast growing, hardy plant species, used in landscaping, which provides shelter for the slower growing, more vulnerable species.

Optimal The most favourable levels of environmental factors suited to growth and reproduction of organisms.

Optimum The best conditions favourable to growth and reproduction of an organism and maintenance of a system.

Sere A succession of plant communities in a given habitat leading to a particular climax association.

Species A group of organisms, minerals or other entities formally recognised as distinct from other groups.

Stress Any environmental factor which restricts growth and reproduction of an organism or population, or which acts to disturb the equilibrium of the system.

Succession The geological, ecological or seasonal sequence of species within a habitat or community.

Tolerance The range of environmental factors within which an organism or population can survive.

Vegetation A general term for plant life or the assemblage of plants in a given area.

Zonation The distribution of organisms in distinctive areas, layers or zones.

Adapted from –

Gilpin A, *Dictionary of Environmental Terms*, Routledge and Kegan Paul, London and Henley, 1976.

Lincoln R. J. Boxshall G. A. and Clark P. F., *Dictionary of Ecology, Evolution and Systematics*, Cambridge University Press, Cambridge, 1982.

Appendix 2 Descriptive profiles of sites showing good and bad practice

Horsenden Hill, Ealing, London

London Borough of Ealing

OS map 176: NGR TQ 162844

At 100 hectares, Horsenden Hill is not only the largest public open space in the London Borough of Ealing it also represents the largest area of ancient rural landscape. The mixture of woodlands, ponds, wild flower meadows and miles of hedgerow gives to the area an exceptional rural quality. The Paddington arm of the Grand Union Canal forms the southern boundary and just across the canal is Perivale Wood Local Nature Reserve, an ancient oak and hazel woodland which is an SSSI and is owned and managed by the Selborne Society.

As well as being very popular for recreational use, this 'island of countryside' has long been recognised for its great wildlife and landscape conservation importance. In 1984 a Countryside Ranger was appointed by the Leisure Services Division to formulate an integrated policy for nature conservation, education and recreation at the site. After basic surveys of the wildlife and landscape features, and following consultation with wildlife conservation experts and local naturalists, the Horsenden Hill Countryside Management plan was published in the following year.

The grassland habitats are a particularly interesting and valuable feature of Horsenden Hill. They illustrate the clear contrast between the intensively maintained, species-poor ryegrass swards which have been retained for intensive sporting and recreational activities, and the species-rich rough grasslands and hay meadows which are managed for their nature conservation importance.

Haymaking was reintroduced to about 50 acres of meadow in 1984 and, in spite of decades of close mowing, cuckooflower, ragged-robin, pepper-saxifrage, and sneezewort have reappeared in places, along with the more common species such as buttercups, ragworts, common knapweed, clovers and bird's-foot-trefoil. The hay is cropped in July or early August by a farmer from the neighbouring Borough of Hillingdon. In order to maintain the low nutrient status necessary for maximum floral diversity, no fertilizers are applied to the hay meadow.

Management of the old unimproved pastures on the steeper slopes involves the hand cutting in early Autumn of small areas on a rotational basis spread over a number of years. Since the cessation of grazing about 50 years previously, scrub has spread from the hedgerows and is threatening the

diversity of this open grassland habitat. Scrub invasion is being controlled to protect the interesting wildlife community which includes such locally rare plants as dyer's greenweed, restharrow, zigzag clover, and lady's bedstraw and a rich fauna which includes the yellow ant and 15 butterfly species.

Hedgerows are one of the most distinctive landscape features of Horsenden Hill, with over 20 species of native tree and shrub occurring, including spindle, dogwood, hazel, field maple and midland hawthorn. A variety of techniques such as traditional hedgelaying and coppicing, and mechanical flailing are being employed to maintain the diversity of hedgerow structure from the wide and overgrown hedges which provide nest sites and winter berries for birds to the more heavily managed which favour the hedge bottom flowers. Some hedgerows, grubbed out in the 1930's are being replanted using locally native shrubs.

Most of the woodland at Horsenden Hill is secondary and has developed on disturbed or neglected land. In order to increase the structural and species diversity, management policy is to create and maintain glades and rides, control the invasive neophytic sycamore, underplant with locally native shrubs and woodland flowers, and introduce a coppice regime.

Horsenden Wood is a 4 hectare remnant of ancient oak and hornbeam woodland which has been much neglected and trampled over the last 100 years or so, however a number of interesting species such as wild service tree, bluebell, dog's mercury and hazel still survive. The management aim of the wood is to restore gradually the herb and shrub layers and encourage natural regeneration within the wood by limited felling, soil scarification, planting, and re-direction of the public onto defined paths. The wood is also being allowed to spread naturally at the perimeter.

There are a number of old, badly overgrown, silted and infilled ponds which are being cleared of debris and encroaching trees. Recolonisation is taking place aided by the careful reintroduction of locally occurring native plants and animals. As wetlands are not a major feature of the locality, a large pond with fringing marsh is being established in an area of waterlogged, species-poor amenity grassland.

Public access to Horsenden Hill has been improved by the provision of better car parking facilities, waymarking and a network of formal and informal footpaths. Visitor enjoyment and appreciation is enhanced by activities and materials organised and

produced by the Countryside Rangers. These include guided walks, illustrated talks, an annual Ealing Countryside Day, a self-guided countryside trail booklet and a set of interpretive boards. Volunteers are involved in practical nature conservation projects and wildlife surveys, and school use of the site for environmental studies is encouraged.

Aylestone Meadows, Leicester

Leicester City Council

OS map 140: NGR SK 575017

Leicester is bisected by a twelve-mile stretch of the River Soar and the Grand Union canal which form an important link between the City Centre and surrounding countryside. The Leicester Habitat Survey conducted by the City Wildlife Project has shown the River Soar and its floodplain to be an important wildlife corridor and to contain a major concentration of sites of high ecological value in the city. Aylestone Meadows includes the site of a former domestic refuse tip located on the floodplain of the River Soar and its tributary the River Biam and includes areas of valuable wetland habitat. The site is being developed as a nature park by Leicester City Council with construction and interpretation assistance from the City Wildlife Project. This is one of a series of initiatives to improve the appearance, ecology and educational facilities of the city, and the public access and recreational facilities throughout Leicester's Riverside Park. The original intention of the City Council was to use the Aylestone site as a sports complex but the plan was abandoned due to ground subsidence on the former tip, so an alternative scheme was adopted to develop the site as a nature park.

The site extends from the areas of valuable wetland and washland habitat alongside the River Biam to the former tip on the eastern edge of the floodplain alongside the Soar Navigation. Most of the former tip has been reclaimed and one part has been grassed over as a sportsfield. However, alongside the sportsfield the council are creating new areas of meadow habitat. The clay used to cap the domestic refuse is naturally poor in nutrients and is ideally suited to the establishment of species rich grasslands. Some areas have been sown with native grass and wildflower seeds while others have been left to allow natural colonisation. Elsewhere on the reclaimed area, native trees and shrubs have been planted, partly to provide physical screening and to camouflage the harsh outline of the tip and partly to increase the diversity of species and habitats present on the site. Habitat creation has not been restricted only to the reclaimed areas. On an area of abandoned sports fields on the washland to the north of site, the City Council have excavated several ponds and mud scrapes to add to the range of aquatic habitats and

to promote the development of ecologically valuable water's-edge communities.

Although the nature park is still relatively new and parts are still being developed, visitors are encouraged to visit as many of the habitats as possible. A well designed network of formal and informal pathways has been constructed through all of the main habitats on the site. The network of pathways is designed to minimise disturbance of the most sensitive habitats. The path surfaces vary according to the type and sensitivity of the habitat, simple close-mown grass strips through the meadows; gravel and shale pathways through the newly planted woodland and shrub areas and raised boardwalks over the marsh/reed wetland areas. Some sections of the path network have been included in a formal nature trail, others are designed for people wishing to use the site for informal recreation which includes activities ranging from simply walking the dog, to horse riding.

Arrow Valley, Redditch New Town

Borough of Redditch

OS map 150

The master plan for Redditch New Town identified the River Arrow Valley as an important natural feature of the new town site. The subsequent developments within the valley have retained many of the landscape features that gave the valley its essential character. Old hedgerows have been retained within new housing and industrial estates. Water courses and old farm ponds have been incorporated into site designs and layouts which may also include mature trees and examples of interesting and attractive habitats such as meadowlands. The character and ecological value of the valley has been further enhanced by mass structure planting of native trees and shrubs alongside roads and as shelter belts within residential and industrial areas. Where appropriate, species mixtures and planting structures are designed to match those which are indigenous to the area. Management of grassland areas, particularly on road verges is designed to promote development of species rich swards through reduced mowing frequencies.

A key feature of the New Town is the creation of a large lake which was originally planned to form part of a flood alleviation scheme for the River Arrow, but is now set aside for amenity and recreation. The new Arrow Lake is the centre piece of a linear countryside park which runs through the heart of the new town along the floodplain and valley of the River Arrow. Some areas of the Arrow Valley Park have been designed with the traditional close mown grass and formal borders but large areas have been set aside for creation of less formal landscapes with species rich grasslands,

water meadows, scrub, woodlands, damp meadowland and wetlands. Retention of old hedgerows and areas of mature woodland within the park greatly increases the variety of wildlife habitat. Although the River Arrow itself has in places been realigned for the purposes of flood alleviation, much of the river channel has been left in its natural state. To the south of Arrow Lake is a newly created balancing pool known as Forge Lake which has been landscaped to encourage wildlife with a diverse range of habitats and native aquatic and marginal plants. A small shingle beach had been constructed in order to attract people to the waters edge while at the same time minimising disturbance to the lakeside flora and fauna.

While much of the emphasis of the New Town design is on creating an attractive mixture of semi-natural green space and more formal landscapes associated with built development, areas of greatest ecological value were identified and protected prior to redevelopment. One of the most interesting of the protected areas is Ipsley Alders Marsh. The site is dominated by an area of fen marsh – a habitat that is rare in Worcestershire. The marsh was identified by the Development Corporation as an area of importance for nature conservation and was protected as a nature reserve and a Site of Special Scientific Interest (SSSI). The reserve has been carefully managed to ensure that the water level and nutrient balance was maintained during the construction of adjoining residential estates and roads. The edges of the reserve have been landscaped to provide a degree of protection for wildlife. Access is controlled by the Worcestershire Nature Conservation Trust who have taken over the management of the reserve from the Development Corporation.

Saltwells LNR, Brierley Hill

Dudley Metropolitan Borough Council

OS map 139: NGR SO 934871

Saltwells LNR is situated in the Blackbrook Valley, 3 kilometres from Dudley town centre. The 40 hectares of woodland covering the nature reserve is an important part of a wider complex of semi-natural habitats extending to the north and south which together form one of the main reservoirs for wildlife in this part of the West Midlands.

The reserve is dominated by oak and beech woodland which have developed from neglected plantations over the last 200 years. Doultons Clay Pit, SSSI is located on the eastern edge of the wood. The pit is the remains of an old marl excavation abandoned 30-40 years ago which has since been colonised naturally with young woodland and scrub, with areas of marsh and willow carr developing alongside the stream in the base of the pit. The ecological value of the Saltwells LNR and

Doultons Clay Pit is enhanced by their location in the complex of semi-natural habitats which allows wildlife to move from one area to another relatively easily. Both sites support a diverse range of species, a number of which are uncommon in the county including southern marsh orchid and breeding tree creepers, spotted flycatchers and wood warblers.

Saltwells was designated as a statutory Local Nature Reserve in 1981, as part of the Blackbrook Valley European Campaign for Urban Renaissance Project. The Blackbrook project was founded with the aim of conserving the best habitats in the valley and minimising the impact from developments taking place in the nearby Dudley Enterprise zone. Dudley Council who own the reserve have recently extended its area under an agreement with Wolverhampton and Dudley Breweries who own adjacent land in the stream valley. The council have also managed to purchase 14.5 hectares of the nearby Neitherton Hill which will add to the area of protected habitat in the valley. Negotiations for the inclusion of the east of the valley as far as Cinder Brook are also at an advanced stage.

Walking through Saltwells Wood the casual visitor can be forgiven for forgetting that he is next to the rapidly expanding industrial area of the Enterprise Zone. Dudley Council have undertaken a major programme of environmental improvements in and around the reserve partially funded by the Department of the Environment and the Inner City Partnership Programme. Pathways and fences have been provided and a visitor car park constructed in a major facelift for the reserve. Apart from the obvious improvement in the attractiveness of the area, the facelift has also produced a marked decrease in vandalism and fly-tipping. In 1984 the project was 'highly commended' in the annual conservation awards given by the Conservation Foundation and sponsored by the Ford Motor Company.

The project also incorporates a nature centre where school children are introduced to woodland ecology. Four wardens are employed to co-ordinate educational activities, promote the reserve to the public and undertake management of the woodlands. The help and expertise of local conservation groups is enlisted in the management of the reserve and in the compilation of detailed information on species and habitats. The survey work carried out by casual employees and funded by the NCC has been completed and a detailed management plan is to be published setting out the long-term management objectives.

Lower Spen Bird Sanctuary, Ravensthorpe

Kirklees Metropolitan Borough Council

OS map 104: NGR SE 227210

Historically, the River Spen valley is an important riverine corridor for migrating water fowl and waders. With increasing pressure from land reclamation and development, much of the wetlands in the valley have been damaged or lost. The Lower Spen Bird Sanctuary has been designed by the Directorate of Technical Services and implemented by Manpower Services Commission labour and local school children in association with, and on behalf of, the Directorate of Leisure Services Outdoor Division. The Sanctuary, in an attempt to replace at least some of the wetlands that have been lost, also provides a valuable educational and recreational resource.

The site covers an area of approximately 3 hectares of a reclaimed sewage works near Ravensthorpe and lies on a meander in a section of the River Spen. It contains a diversity of habitats, created from the rubble of the former sewage works, including dry grassland, scrub, wetland and the stream channel itself.

A large pool has been excavated alongside the River Spen to increase the area of wetland and open surface water. The water level is maintained by a sluice system connecting to the river. The pond has been constructed with a range of water depths. The shallow margins of the pool have been left open for wading birds, other shallow areas will be naturally colonised by emergent plants typical of the 'water edge' community. Small islands have been constructed in the middle as a refuge for resident and visiting wildfowl and to increase the area of water edge habitat. Deeper areas (1 metre depth) have been excavated to restrict the spread of aggressive emergent species such as bulrush *Typha latifolia* to the margins and maintain sufficient areas of open water for wildfowl. Access is restricted to minimise disturbance to birds and wildlife, however three carefully located hides have been built which overlook the water. Native trees and shrubs have been planted to increase the variety of habitats and species and provide cover for wildlife. When established the trees will act as a screen round the wetland area which will further minimise disturbance.

The remainder of the site is raised above the level of the flood plain. The flora of this area is characterised by vigorous competitive species such as docks and thistles which are particularly suited to the nutrient-rich soil that is a legacy of the former sewage works. In contrast to the lush vegetation on the flood plain, a small area to the south-west of the site has been left as graded rubble and bare ground to encourage colonisation by typical 'wasteland' species which are now moving in to give a wider diversity of flora and fauna on the site, especially insects.

The public are allowed free access to the less sensitive areas of the reserve along a system of pathways. The site is one of ten in the Kirklees district which are being promoted through the Countryside Link project, which aims to increase public access to and awareness of the countryside and nature reserves in the area.

Chorlton Ees, Mersey Valley, Manchester

Mersey Valley Joint Committee - Manchester City Council - Stockport Metropolitan Borough - Borough of Trafford - North West Water Authority

OS map 109: NGR SJ 804932

The Mersey valley is part of a network of river valley improvement schemes in the Greater Manchester area. The scheme is co-ordinated by a partnership of district councils, the former Greater Manchester Council and the North West Water Authority who together comprise the Mersey Valley Joint Committee. The aim is to create an attractive countryside setting for a wide range of recreational activities within easy reach of peoples' homes.

Chorlton Ees nature reserve is a reclaimed site within the Mersey Valley which has been set aside for wildlife and nature study. The site was previously part of the Withington Sewage Works which was finally closed in 1972 after 100 years service. At the time of its closure the works was already established as an important haven for local wildlife. Marshes, reed beds and ponds as well as areas of young woodland and meadows had developed through natural colonisation of the neglected works. The mix of different habitats attracted nesting and overwintering birds. The wetland areas were particularly rich in wildlife.

Initial structural improvement works were undertaken as part of 'Operation Eyesore'. Old settling tanks were fenced in, some new ponds excavated and trees planted. Much of the initial work was not specifically designed to promote wildlife on the site, but was designed to increase accessibility. Some of the landscape planting was based on non-native species which would give rapid growth. These will be thinned out as they develop.

More recently access arrangements have been improved with a network of pathways surfaced in fine sand which enables wheelchair users to visit the site. Gates at the entrance to the reserve have been constructed to keep motorbikes out yet at the same time allow access for disabled visitors. Some areas of the most developed woodland have been coppiced to create age and structural diversity. To increase the variety of wetland habitats, several new ponds have been excavated within the scrub woodland areas.

Management of the reserve is carried out by

volunteers working under the supervision of the Mersey Valley Countryside Warden Service. A long-term management plan for all of the prime habitats represented on the reserve will be prepared once the detailed surveys of the sites flora and fauna have been completed.

Situated to the west of Chorlton Ees, a former domestic rubbish tip has been reclaimed as public open space. A bridge and pathway over Chorlton Brook connects the nature reserve with the reclaimed area which is managed as a hay meadow to increase the abundance and wildflowers in the grassland. Some areas have also been planted with native trees and shrubs to give a more varied and interesting landscape. An old hawthorn hedge has been retained and is being managed by laying in the traditional Cheshire style.

Risley Moss, Warrington

Cheshire County Council

OS map 109: NGR SJ 667918

Risley Moss is one of the last remaining remnants of the Chat Moss raised bog system which once covered much of the Mersey Valley between Warrington and Manchester. Prior to commencement of development works by the Warrington and Runcorn Development Corporation in 1975, the site was suffering from the effects of drainage and falling water tables. Birch encroachment and frequent fires were threatening to overwhelm the vulnerable mossland community. Unsightly tips of pyrotechnic waste that had been dumped on the moss during and after the Second World War added to the general atmosphere of dereliction and neglect. Despite all of this, the site was still recognised as a valuable local refuge for wildlife. The Warrington and Runcorn Development Corporation undertook to try and develop the site as a joint educational, recreational and conservation facility to serve the needs of the rapidly growing new town population. Despite initial scepticism on the concept of combining these apparently conflicting objectives on one site, Risley Moss is today widely recognised as a project where the needs of recreation and education have been successfully integrated with those of conservation.

One of the first conservation objectives was to raise the water table by the construction of a series of sluices. Restoring water levels within the peat halted the spread of invading purple moor grass and encouraged the regeneration of sphagnum moss, cotton grass and other characteristic mossland species. Removal of the pyrotechnic waste tips assisted the slow process of recovery for the delicate mossland ecosystem. Ten years later the mossland has improved considerably and now attracts a wide variety of mossland birds and other wildlife. Management is now relatively low-key and

focuses on actively controlling the invading birch scrub and implementing a programme of mossland plant introductions.

The second distinct physical zone at Risley Moss is an area of secondary woodland which has recolonised the derelict site over the last 40-50 years. Management of the predominantly birch scrubland habitat has focussed on thinning and clearing to open up the canopy and promote regeneration. By opening up the canopy more light reaches the woodland floor and woodland plants are able to flourish. Glades have been created within the birch woodland and these have been sown with grass seed mix to increase the diversity of habitats. Coppicing is employed in the management of the regenerating birch to promote structural diversity. Coppicing is also practiced in the management of areas of willow scrub on the site.

Woodland of a different character has developed along the northern edge of the designated area. There mixed oak/elm/ash habitat has presented different problems. Rather than the over dense canopy of the birch woodlands, much of the canopy had been lost through the ravages of Dutch Elm disease. Management has been directed towards replacing the lost elms with a broken canopy of oak, ash and bird cherry. Understorey light demanding species such as alder are regularly coppiced to create age and structural diversity. Again, open glades have been left to encourage the development of a diverse herbaceous ground flora. The dense screen of dog rose which was planted to channel public pressure will be gradually removed and cut back as the woodland regenerates. Where possible, dead trees are retained as a habitat for insects, fungi and nesting birds, except where they may pose a risk to public safety on nearby footpaths.

Grassland management is designed to encourage grassland communities to develop. Differential mowing ensures that there is a smooth transition of ecotone between the shorter areas designed for walking or picnicking, through areas of meadow to woodland edge scrub. The mowing regime is sufficiently flexible to cater for the wildflowers that have colonised the meadows: for example areas of thistles are left uncut to attract insects and birds.

Three ponds within the woodlands have been cleared of silt and their edges shelved to help prevent the spread of emergent vegetation. Timber platforms constructed along one side of the ponds help to minimise erosion of the banks and trampling of poolside vegetation by schoolchildren engaged in pond-dipping.

Site based rangers are actively involved in all aspects of interpretive provision. A large visitor centre has been built at the entrance to the site as a home for exhibitions about the site history, development and natural history. The centre also doubles as an informal local community centre.

Hawkfield Meadows, Bristol

Bristol City Council

OS map 172: NGR ST 590683

Hawkfield Meadows extend over 55 acres of neglected agricultural land on the southern fringe of Bristol. At first sight the meadows appear typical of many such urban fringe areas where agricultural land has been scheduled for development and consequently allowed to run down. Fences and gates have been broken encouraging vandalism and fly-tipping. Hedgerows are overgrown and scrub is rapidly taking over areas of meadow. Whilst this general picture is all too familiar, what distinguishes this particular site is the exceptional variety of wildflowers which make this one of the best examples of undisturbed grassland habitat in the county. The site is also important because it contains sizable populations of rare plant species including small reed grass, water avens, adders tongue fern and corky-fruited water dropwort.

The Hawkfield Meadows site was earmarked for industrial development in 1981. The size and location of the site in area of high unemployment were the main factors considered in the initial decision. By 1985 the Planning and Traffic Committee were considering the planning application for detailed infrastructure works. At this point the Avon Wildlife Trust raised objections on the grounds that the site was important for nature conservation. The objection came too late to save the site and planning permission was granted. Negotiations then followed between the City Valuers, Planning and Parks departments, the Avon Wildlife Trust and the Nature Conservancy Council to find ways to save at least some of the most valuable areas. Discussions centred on two options; the first and most desirable option was to preserve part of the meadows as an integral feature of the new development; the second, less desirable, option was to attempt to rescue some of the flora by turf transplants to other sites in Bristol. The Avon Wildlife Trust submitted a plan whereby a 'core area' of the best grasslands would be retained in the development. In the event a compromise plan was adopted whereby a 15-20 metre strip of meadow would be retained round the periphery of the site and managed as an informal footpath and bridleway. The City Council agreed to provide the necessary funding to cover the costs of turf transplanting from areas of the site most directly affected by the development scheme. In addition one of the main developers has now adopted a landscaping scheme designed to create new areas of wildlife habitat with native trees and shrubs and areas of meadow.

While it is unfortunate that the ecological value of this site was identified too late to save it from development, it is encouraging to see that the City Council and the developers have attempted to retain or save at least some of the wildlife habitat and are willing to adopt flexible landscaping designed to create new opportunities for wildlife.

Crymlyn Bog National Nature Reserve, Swansea

Swansea City Council

OS map 159: NGR SS 690945

Crymlyn Bog extends for more than a square mile and represents the largest surviving area of lowland fen in Wales. The bog is sandwiched between the Llandarcy Petro-Chemical works to the north-east and the industrial area around Port Tennant Docks to the south and south-west. Despite its close proximity to large chemical works, railways and the docklands, the bog is recognised as a site of national nature conservation importance on account of the wide range of flora and fauna it supports.

Parts of the southern fringes of the main bog have been buried in a deep layer of fly ash tipped during the life of the Tir John Power Station. Following its closure and demolition, the Central Electricity Generating Board sold off the site of the station to Swansea City Council who used the site for a number of years as an informal rubbish tip. The remaining areas of the bog are now owned by local farmers, the Tennant Canal Company and the Nature Conservancy Council.

In 1981, the City of Swansea and the Nature Conservancy Council put forward a joint strategy for 'the designation of Crymlyn Bog as a National Nature Reserve, the tipping of baled domestic refuse within a system of landscaped screens and recreational after use..... and landscaped protection of the surrounding hills'. The strategy was an attempt to balance the conflicting needs for a suitable waste disposal site for the City of Swansea and the protection of the nationally valuable conservation site.

The strategy was followed in 1982 by a detailed 'action plan' for the development of the reserve and the waste management operation. The plan drew attention to the need to minimise the impact of the potentially polluting landfill on the adjoining bog communities. Detailed investigations of the inter-relationships between the nature conservation interests and the hydrology of the reserve and the possible impacts of pollution arising from the landfilling, fly ash tips and adjoining industry were initiated by the Nature Conservancy Council once the screens had been constructed. When the results of these studies are available they will prove valuable in fine-tuning the management of the reserve and the refuse disposal operations.

Parts of the National Nature Reserve owned by the City Council but not required for waste disposal are now managed by the Nature Conservancy Council under the terms of a formal nature reserve agreement between the two parties. Landscape improvements to areas adjoining the waste tip and the Port Tennant industrial area have been undertaken by the City Council. Eventually the whole area will be set aside for nature conservation and informal recreation.

St Laurence's Junior School, Northfield

Birmingham City Council

OS map 139: NGR SP 026796

St Laurence's is typical of many urban schools with brick and concrete school buildings surrounded by asphalt playgrounds and few hectares of close-mown sports fields. While the buildings and walls may provide a habitat for some hardy plants and animals adapted to life on cliffs and rocks and the playing fields may host the occasional flowering plant such as daisies and dandelions, they offer only limited opportunities for studying ecology and the natural environment.

Recognising that the children they were teaching had restricted access and very little experience of semi-natural habitats, staff at St Laurence's decided to create their own wildlife area in corner of the schools grounds. The objectives of the project would be; to provide a base for fieldwork studies to help pupils gain knowledge of ecology, general biology and the natural environment; to help foster a caring attitude towards living things and to increase awareness of their surroundings; to develop physical skills.

The project was started in 1978 with an agreement from the Birmingham Education Department that a small area at the edge of the football pitch be fenced off and developed as a nature study areas. By the end of the year native shrubs and trees had been planted by children and parents and a nature trail laid out through the area. The following year the nature trail was extended to incorporate a newly excavated 'bog garden' filled with water-logged peat and planted with sedges and bog plants. A small drystone wall next to the bog garden was constructed to provide a home for spiders, beetles and plants typical of this habitat. Along an edge of the bog a small fibreglass pond was installed to supply water to keep the peat moist.

By this time the project had attracted considerable interest from other schools, conservation groups and the media. The nature area was being used for project work ranging from investigations of natural dyes extracted from plants to simple biological experiments and recording exercises. Such was the success of the project that children were even using their dinner hours to explore the nature area.

Since 1980 the original study area has expanded in size with more species being introduced. An old English hedge has been planted along the school boundary and foxes have moved into an old den at the edge of the sports field.

With such a diversity of semi-natural communities in a small area there is a tendency for species associated with one community to invade areas set aside for another. This 'edge-effect' presents difficulties in the management of the site and

necessitates frequent intervention to control the spread of the more invasive species. The small size of the site also limits its capacity to withstand the frequent disturbance and trampling associated with field study activities. To allow the communities to recover from excessive pressure, access is restricted during the winter months.

Since the St Laurences nature study area was founded, schools throughout the country, aided by grants from the Nature Conservancy Council, have created small nature areas. The success of the St Laurence scheme proves that small areas can be viable providing that the enthusiasm of the staff and pupils is maintained.

Camley Street LNR, Camden

London Borough of Camden - Greater London Council - London Wildlife Trust

OS map 176: NGR TQ 299 834

Camley Street LNR is a small site (2.2 acres) on the bank of the Regents Canal near St Pancras and Kings Cross Stations. The site was formerly a coal drop for the canal traffic and had been vacant for 15-20 years. During this time a wasteland flora had developed and when surveyed by the London Wildlife Trust in 1981, the site was identified as being worthy of retention for its wildlife interest. The site was destined to be a coach park, however due to lobbying by local people this threat was averted. Proposals for the establishment of a natural park were submitted to the Greater London Council (GLC) in the autumn of 1981. These were supported by local schools who argued that there was a lack of nature study areas in Camden.

The Park was designed by the GLC's landscape architects and ecologists. The main feature of the site is the pond fed by the canal. The pond is surrounded by marshland and water-edge habitats grading into wet woodland of Willow and Alder and elevated banks planted with deciduous woodland species and wildflower meadows. Since 1986 following the abolition of the GLC, the park was inherited by the London Borough of Camden with the London Wildlife Trust continuing to manage the area through a short-term lease arrangement. In April 1986 it was declared as a statutory Local Nature Reserve in recognition of its local value.

The aims of the project are to increase 'natural open space' in an area otherwise deficient in natural habitat, to provide an area of use for passive recreation, to provide an educational resource and a base for research by the staff and others.

The Park is staffed by a full-time warden and a project officer employed by the London Wildlife Trust, a teacher employed by the Inner London Education Authority and volunteer wardens. A classroom has been constructed on the site which

also doubles as an informal interpretive centre for other visitors to the site.

The teacher is on site to work with up to 40 school children who visit the Park every week day during term time. The children are involved in activities such as pond-dipping, 'mini-beast studies' and exploring the range of habitats in the Park. A bridge across the pond is extensively used for pond dipping and railway sleepers at the edge of the pond allow access to the waters edge. The classroom and visitors centre are used by the children to follow up their activities.

Educational use of the site inevitably puts a strain on the various habitats of the Park. A management plan has been produced which takes this into account where a balance is achieved by focusing studies on different areas at different times of the year. Access to more sensitive and less well established areas is avoided by using the vegetation as a natural barrier. A thorny hedge is being established along the canal bank to increase the safety of the children without creating obvious barriers to freedom of discovery.

The London Wildlife Trust is hoping to open a loop walkway in the near future and to improve the interpretation facilities.

Benwell Nature Park, Newcastle-upon-Tyne

Newcastle upon Tyne City Council

OS map 88: NGR NZ 217637

Benwell Nature Park was established in 1982 on 2 hectares of vacant inner city land formerly occupied by terraced housing. The site is located 3 kilometres to the west of Newcastle City centre overlooking the power station and factories that have grown up along side the River Tyne. Major sources of funding were provided by Derelict Land Grant and Inner City Partnership. The City Council together with the British Trust for Conservation Volunteers and the Nature Conservancy Council provided the necessary backing and resources for the adults and children from Newcastle who participated in the development of the Park. Its main role is to provide an educational resource for the City. Children visiting the site are involved in the creation and care of a variety of demonstration habitats including a pond, rockeries, flower beds stocked with indigenous plants and native trees and shrubs, herb gardens, a dry-stone wall and an area of wildflower meadow with turf rescued from a local magnesium limestone quarry.

A valuable aspect of the practical work undertaken by visiting school children is in helping to increase their awareness of the surrounding environment. Planting trees, sowing seeds and other practical activities helps to give them a sense of 'ownership' of the Park with the result that the Park is relatively

free from vandalism. The park has its own classroom which provides a fieldwork base for studies of the Benwell area. Local children are encouraged to get involved in conservation activities with the Benwell Nature Club. The Club undertakes nature conservation tasks at sites throughout Newcastle and is particularly active in helping to improve a 1.6 hectare site on farmland on the urban fringe of the City.

Aside from a valuable educational role, Benwell Nature Park contributes to the wider protection and promotion of wild life in Newcastle, and seeks to involve the community in all aspects of its activities. The Park is situated in a part of the City designated as an 'action area' in the Draft Nature Conservation Strategy for Tyne and Wear. The Strategy, which was promoted jointly by the former County Council and the Nature Conservancy Council with the support of the five District Councils and voluntary organisations, seeks to establish a network of wildlife sites and corridors throughout the county. The planned network consists of 'sites of nature conservation importance' (SNCI) and 'wildlife reservoirs' interlinked by a system of existing and potential 'wildlife corridors'. Areas of the city where there is little or no semi-natural green-space within a kilometre of peoples homes or where there are gaps in the corridor system are designated as 'action areas'. Benwell Nature Park is located in one such an area on part of a potential green corridor linking Benwell with Woolsington Park to the North West.

Straiton Pond Edinburgh

Edinburgh City Council

OS map 66: NGR NT 282667

A survey of freshwater habitats in the Lothian Region conducted by the Scottish Wildlife Trust during 1972-76 lists Straiton Pond as one of a dwindling number of ponds in the Edinburgh District. Of only 26 ponds that were identified in the Edinburgh District, the majority were either reservoirs or ornamental ponds of a very artificial nature. Straiton Pond was one of only a handful of sites of importance for wildlife, particularly as it is one of the four most important amphibian breeding sites in the district.

The pond was formed in an old claypit which was abandoned in 1952 after the closure of the local brickworks. Since then the site has been left derelict owing to the difficulties facing redevelopment which include underground workings, overhead powerlines and proximity to the proposed route for the city bypass. The site has also benefited from further protection from redevelopment by its location within the Edinburgh Green Belt.

Like many abandoned industrial workings, the

pond and its surroundings have been colonised by a variety of plants and animals which have moved in to take advantage of the range of habitats found on the site. Its significance as a semi-natural wetland habitat has been enhanced by being relatively development over the last 30 years. The sheltered shoreline provides an ideal habitat for emergent vegetation which includes common reed, bulrush, branched bur-reed, bottle sedge and yellow iris. Floating vegetation round the margins of the pool includes amphibious bistort and broad-leaved pondweed. In the deeper areas submerged aquatic plants such as spiked water-milfoil, Canadian pondweed and mare's-tails flourish in the clear unpolluted water of the pond. Animal life thrives here to, 24 species of water beetle have been recorded. Frogs, toads and palmate newts all breed in the pond. The wildlife invasion doesn't end here. Abandoned railway sidings, industrial waste tips and an old mineral line adjoining the pond have developed typical scrub vegetation. Damp grasslands around the pool margins support colonies of spotted and northern marsh-orchids. The chemical waste tips are highly alkaline and have been colonised by characteristic alkaline grassland flora. Over sixty species of birds have been recorded at the site.

Despite the recognised importance of Straiton Pond for wildlife, there have been a number of threats to its future in recent years. The pool and surrounding scrub have been adopted by local residents as an informal rubbish dump and the site is badly affected by motorcyclists who use the area as a scrambling course. Proposals have been put forward to redevelop the area for housing or for infilling with domestic refuse. Fortunately, Edinburgh City Council acted to preserve the site and acquired it through a Compulsory Purchase Order specifically for development as a local non-statutory nature reserve. The City Council, having assured the pond's future, is now working in close co-operation with local conservation organisations to compile a detailed picture of the ecology of the site, the aim being to prepare a comprehensive long-term management plan. Among the priorities will be the need to ensure public safety while at the same time minimising disturbance to the sensitive habitats. The pool itself is 25 metres deep in places and access to the pool side will be restricted, both to reduce risks to children using the site and also to reduce disturbance to wildlife using the pond. Elsewhere, the presence of potentially toxic chemicals presents safety hazards of a different kind. Much of the waste is now protected by a healthy grassland sward, but in places it has been exposed through erosion. The City Council hope to leave much of the grassland undisturbed and only where absolutely necessary will material be brought in to cover the exposed wastes.

Westport Water Park, Stoke-on-Trent

Stoke-on-Trent City Council

OS map 118: NGR SJ 853502

Stoke-on-Trent is recognised as one of the country's most active local authorities in the large scale reclamation of derelict land. The area has been badly scarred by industrial dereliction resulting from coal mining, marl excavation, pottery tips and abandoned mineral railway lines. Further problems have been caused by subsidence resulting from coal and marl extraction. Westport Water Park has been developed on the derelict site of the Port Vale Football Club practice ground which subsided in the 1890's to form a series of lakes and pools which are now fringed by a variety of industries.

The reclamation programme started in 1970 with the aim of developing the site as a 94 acre water recreation centre. There are few such facilities in the Staffordshire area and despite its less than attractive surroundings, the Westport site offered great potential for swimming, fishing and water sports in general. Phase I of the reclamation programme concentrated on a facelift for the main lake which was planted with native trees to form an open parkland landscape. This part of the scheme was primarily designed as a recreation facility, however wildfowl are encouraged to use the lake during the winter season when boating is restricted. To the west of the main lake 10 acres of marshland alongside the Fowlea Brook were reclaimed in Phase II. The area is adjacent to the Euston-Manchester railway line, and chemical dumping and the formation of a tar pit had polluted the site. The Brook was semi-stagnant, susceptible to flooding and badly contaminated by sewage from the nearby sewage works together with seepage from the chemical wastes. Despite these obvious physical problems it was decided to set aside this part of the site for Nature Study Area. The marsh, which already attracted wildfowl and marshland birds was partially dredged to form open pools with islands left at the centre of each pool to preserve some of the existing flora and fauna of the area. Planting and landscaping in the remainder of the Study Area was designed to recreate natural habitat structures or climax plant communities that would naturally occur on a site of this kind. Alders were planted round the pool to form alder carr. A variety of species of willows were also planted in the damper areas of the site. Herbaceous species were introduced from local sources. An area of informal grassland/scrub was also created. Rare species were not imported into the site which was designed specifically as a study area rather than a nature reserve.

Sheepwash Urban Park, West Bromwich

Sandwell Metropolitan Borough Council

OS map 139: NGR SO 975917

Sheepwash Urban Park is an ambitious derelict land reclamation scheme whereby 30 hectares of former mineral workings in the heart of the industrial 'Black Country' are being transformed into an area of woodlands, pools and meadows. It is located beside the busy main Birmingham to Wolverhampton railway line and the Birmingham Canal which run side by side on an embankment overlooking the site. Before reclamation works were started the site was an eyesore with abandoned clay pits filled with toxic wastes, uncapped mineshafts and deep, stagnant pools. The River Tame which crosses the site was prone to flooding which compounded the problems associated with the reclamation works.

The reclamation project was initiated in 1977 by the Sandwell Council. The large pool in the centre of the site next to the River Tame was found to be too deep to drain and fill and so was incorporated into the original plans for the site. Severn Trent Water Authority joined the reclamation effort with a proposal to improve the River Tame and create a balancing lake out of the large Sheepwash Pool.

Since 1985 a number of separate reclamation phases have been implemented with general financial support from the Department of the Environment through the Derelict Land Grant programme. Additional sources of finance including the Urban Programme and Forestry Commission Grant have been used where Derelict Land Grants has proved inadequate to cover costs over and above those of basic landscaping. Not all of the site has been cleared during the restoration works. Valuable wetland habitats and old rough grazing areas have been retained and will be managed as conservation areas by local voluntary conservation bodies.

The improvement works to the River Tame have unfortunately resulted in the loss of the established waters-edge habitat. The unsympathetic treatment given to the river engineering works, which were determined by hydraulic considerations, contrasts strongly with the landscaping of the pools where new habitats have been created by ground modelling to give promontories, small islands, shallow areas etc. Local residents and school children have been involved in planting the pool edges with native plants rescued from nearby pools. Earlier structure planting of native trees and shrubs at the entrance to the park are well established and there are plans to use parts of the site for urban forestry. Recent work on the site has included sowing areas of grasslands with native plant seeds. Local school children have been involved in tree planting around the site.

When the restoration of the site is completed it will

represent a significant local feature and an area of value to local wildlife. Its strategic importance is increased not only by its size, but also by its location at the junction of three separate wildlife links - the canal, railway and River Tame - which connect the site with a network of wildlife corridors and wildlife reservoirs throughout the West Midlands conurbation. The West Midlands County and Sandwell's proposed Nature Conservation Strategies identify the site as an important 'stepping stone' for wildlife. Its location midway between the important wildlife areas of the Blackbrook Valley/Saltwells Wood LNR and the Sandwell Valley and its comparatively large size make this an important part of the county wide network of wildlife sites.

Appendix 3 Local groups involved in urban nature conservation

Aberdeen Urban Wildlife Group
Mill View
Burnside Road
Kennerty
Peterculter
Aberdeen AB1 0LP

Avon Wildlife Trust
The Old Police Station
32 Jacob's Wells Road
Bristol BS8 1DR

Bedfordshire and Huntingdonshire Wildlife Trust
Priory County Park
Barkers Lane
Bedford MK14 9SH

Belfast Urban Wildlife Group
3 Killeen Park
Belfast
N Ireland BT11 0HH

Berkshire, Buckinghamshire, and Oxfordshire
Naturalists' Trust (BBONT)
3 Church Cowley Road
Rose Hill
Oxford OX4 3JR

Bolton Urban Wildlife Project
Lancashire Trust for Nature Conservation
19 Chorley Old Road
Bolton BL1 3AD

Bracknell Wildlife Group
Bankside
44 Gipsy Lane
Wokingham
Berkshire RG11 2BS

Bradford Urban Wildlife Group
4 Wagon Lane
Bingley BD16 1LT

Brecknock Wildlife Trust
Lion House
7 Lion Street
Brecon
Powys LD3 7AY

Brighton Urban Wildlife Group
c/o The Booth Museum
194 Dyke Road
Brighton BN1 5AA

Cambridgeshire Wildlife Trust
5 Fulbourn Manor
Manor Walk
Fulbourn
Cambridge CN1 5BN

Carlisle Wildlife Group
Croft Cottage
Blencogo
Wigton CA7 0BZ

Central Scotland Countryside Trust
Hillhouse-ridge Farm
Shottskirk Road
Shotts M17 4JS

Cheshire Conservation Trust
c/o Marbury County Park
Northwich CW9 6AT

City Wildlife Project
'Parkfields' Western Park
Hinkey Road
Leicester LE3 6HX

Cleveland Wildlife Trust
The Old Town Hall
Mandale Road
Thornaby
Stockton-on-Tees TS17 6AW

Clyde Calders Urban Fringe Management Project
Motherwell Business Centre
132 Coursington Road
Motherwell ML1 1PW

Community Environment Project
Ferry Gardens
South Street
Gosport PO12 1EP

Community Landscape Trust
The Woodlands
Monkwood Green
Worcester WR2 6NX

Cornwall Trust for Nature Conservation
Five Acres
Allet
Truro TR4 9DJ

Cumbria Urban Wildlife Project
Church Street
Ambleside LA22 0BU

Deeside Urban Wildlife Group
10 Ridgeway Close
Connahy's Quay
Deeside CH5 4LZ

Derby City Wildlife Project
Elvaston Castle Country Park
Derby DE7 3EP

Derbyshire Wildlife Trust
Elvaston Castle Country Park
Derby DE7 3EP

Devon Wildlife Trust
35 New Bridge Street
Exeter EX3 4AH

Dorset Trust For Nature Conservation
39 Christchurch Road
Bournemouth BH1 3NS

Dundee Group (Scottish Wildlife Trust)
1 Hazel Drive
Dundee DD2 1QQ

Dundee Urban Wildlife Project
City of Dundee District Council
Natural History Museum
Barrack Street
Dundee

Durham Wildlife Trust
52 Old Elvet
Durham DH1 3HN

Dyfed Wildlife Trust
7 Market Street
Haverfordwest
Dyfed SA61 1NF

Eastbourne Wildlife Project
Eastbourne Borough Council
Technical Services Department
68 Grove Road
Eastbourne BN21 1NF

Environment Bromley
300 Baring Road
London SE12 0DS

Environment Centre
Drummond High School
Cochran Terrace
Edinburgh EH7 4QP

Essex Naturalists' Trust
Fingringhoe Wick Nature Reserve
South Green Road
Fingringhoe
Colchester CO5 7DN

Essex Urban Wildlife Project
Wat Tyler County Park
Pitsea
Basildon SS16 4UH

Gainsborough Urban Wildlife Group
Trent Vale Countryside Project
2 Bowmont Street
Gainsborough

Glamorgan Wildlife Trust
Nature Centre
Fountain Road
Tondu
Bridgend CF32 0EH

Glasgow Urban Wildlife Group
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Centre for Environmental Education
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Gloucestershire Trust for Nature Conservation
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Church Street
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Romsey SO5 8BZ

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Hereford HR1 2NW

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St Albans AL3 4SN

High Wycombe Wildlife Group
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Bourne End
Buckinghamshire

Ipswich Urban Natural Heritage Project
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Ipswich IP1 2BZ

Islington Ecology Unit
4 Tufnell Road
London N7

Kent Trust For Nature Conservation
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Cuerden Park Wildlife Centre
Shady Lane
Bamber Bridge
Preston
Lancs PR5 6AU

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25 Gerrard Street
Lancaster LA1 5LZ

Landlife: Liverpool
The Old Police Station
Lark Lane
Liverpool L17 8UU

Landlife: Manchester
North West Civic Trust
Greaves School
Bolton Road
Swinton
Manchester M27 2UX

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Leeds LS6 1RF

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Leicester LE1 6UU

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Wildlife Giftshop
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Lincolnshire & South Humberside Trust for Nature
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London WC2 9HJ

London Ecology Unit
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London N1 9AG

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Broughton Road
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Lowestoft NR32 1XC

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Old Methodist Chapel
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Luton LU2 0BN

Manchester Wildlife Trust
31 Stanley Road
Whalley Range
Manchester M16 8HS

Manx Nature Conservation Trust
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Ballaugh
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Norwich NR1 4DF

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Plymouth LP4 7PT

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Shropshire Wildlife Trust
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Telford TF8 7PW

Telford Nature Conservation Project
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