Establishing Quantity Standards for Natural Space Provision

A study by Pengelly Consulting

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Introduction

Natural greenspace provision in the UK is currently guided by the use of the Accessible Natural Greenspace Standard (ANGSt), developed by English Nature in 1995, in their report *Accessible natural greenspace in towns and cities – a review of appropriate size and distance criteria*. On its inception in October 2006, Natural England placed this standard at the heart of its policy position. The ANGSt model requires:

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

Note: The 300 metre distance in the ANGSt model reflects an acceptable walking distance, as suggested by research undertaken for the standard. This was considered to be approximately 100-400 metres, or a five minute walk (Handley, et al., 2003).

Natural England's policy advocates that housing growth should have a positive impact for the natural environment and for people, and sees green infrastructure as being at the heart of developing sustainable communities. It also views new housing development as a key opportunity to improve environmental quality and increase environmental capacity.

The ANGSt standard has been widely used for reference by local authorities in the UK, but arguably not as consistently as per Natural England's original aspirations, and progress in the context of influencing provision of natural greenspace in new housing developments has been slow to materialise.

The objective of this report is to identify how ANGSt might best evolve for the purpose of negotiating local developer contributions, and to develop a draft matrix tool to be tested by practitioners to identify potential success when applied across the UK.

Work to date

The aim of this project was to develop a matrix as a possible tool for establishing locally driven references and applications for various categories of natural space provision, in terms of quantity per head of population. This would provide an evidence base for future planning of

natural space, and for developer contributions through Section 106 agreements and the Community Infrastructure Levy.

Following an inception meeting between the client and consultants, we carried out desk-top analysis of the implementation of ANGSt to date, including its communications and marketing.

We have identified a model to facilitate change in the provision of natural open spaces and to accommodate improvements in biodiversity from other types of space. We have developed standards for dealing with existing deficiencies of natural space in the context of new provision requirements.

Case studies have been written up and analysed for their strengths and weaknesses, including details on the processes undertaken to achieve them. We have provided examples of natural space standards applied in other countries and other parts of the UK, with a report on options for consideration against the model outcomes. This baseline information was used to develop the draft matrix tool.

Accessible natural greenspace

Definition

English Nature defined natural greenspace as "*areas naturally colonised by plants and animals*" (Handley, et al., 2003). Some local authorities trialling the ANGSt model reported difficulty in identifying natural greenspace from this definition, with Manchester City Council adopting the alternative definition of "*sites where natural processes (growth, reproduction and mortality) are allowed to dominate*" (ibid., 2003).

The problem of natural greenspace definition is perhaps less of a problem in the wider countryside, where the 'naturalness' of the open space is easier to identify.

Assumptions for this analysis

In summary, the assumptions about which types of natural greenspace should be included were:

1. We have included all sites with value for biodiversity, with no size restriction. This varies from the practice promulgated by the ANGSt standard of only including sites greater than two hectares.

2. Provision relates to sites where visitors are welcome, even if access may be restricted in certain areas and/or at certain times to only part of the site. This should not include permanently excluded areas.

3. Provision does not include sites that charge for access. Sites with car park charges would be included if the site was otherwise accessible.

4. A site being 'welcome' to visitors is a key difference between the study's definition of accessible natural greenspace, and land only accessible via the Public Rights of Way (PRoW) network.

5. 'Linear' accessible natural greenspace, i.e. disused railways and similar promoted routes, canals, and the coast, should be included as a separate dataset.

1. Sites with biodiversity value

Imposing a size limit of two hectares reflects an assumption that a site smaller than this would not be sufficiently large to accommodate both public access and wildlife-rich habitats. In practice the biodiversity value of greenspace areas is only partially related to size; local importance for wildlife is more dependent on the nature of the site and its management. Using this 2ha definition of natural greenspace would be a bar to including many valuable greenspace sites in both urban and rural areas.

2. Sites where visitors are welcome even if access is restricted

An assumption made for all natural greenspace areas in this analysis was that the public should be freely able to access each site, on foot, across its entirety. However, provision of natural greenspace areas may include those sites where access might be restricted in certain areas and/or at certain times to only part of the site, where this is needed to maximise their value for wildlife.

3. Sites that charge for access should be excluded

A further definition adopted for the model was that access to the sites should be free. Sites with a car park charge were included if the site was otherwise accessible.

4. Sites being welcoming as well as accessible via public rights of way

Public rights of way (PRoW) clearly provide an important means for people to access the countryside. However, the condition of rights of way, and poor or absent signposting, can deter visitors, particularly those who are less familiar with the footpath network. In the last national survey of the condition of rights of way in England, it was found that walkers could expect to encounter serious problems on a path every two kilometres (Countryside Agency, 2001).

Rights of way are also likely to provide local access to the countryside for those living in rural areas. However, for town and city populations, and those unused to being in the countryside, rights of way alone are perhaps unlikely to provide enough opportunities for people to enjoy natural greenspace. They should not, therefore, be seen as a substitute for other forms of natural greenspace provision.

5. 'Linear' natural greenspace included as a separate dataset

In Planning Policy Guidance 17 (PPG 17), a distinction is made between two main sub-sets of open space: greenspace, which is normally vegetated; and civic space, which is predominantly hard-surfaced. The companion guide to PPG 17 suggests that planning authorities use the typology of open spaces proposed by the Urban Greenspaces Taskforce, or a variation of it (Office of the Deputy Prime Minister, 2002b). From these information sources, the following definitions were used in this study for areas of accessible natural greenspace:

- Natural and semi-natural greenspace – including woodlands, urban forestry, scrub, grasslands (e.g. downland, commons and meadows), and wetlands
- Green corridors – including river and canal banks
- Country parks

Specific decisions were taken in relation to the inclusion of linear greenspace (such as the coast, canals, and disused railways), and water bodies such as reservoirs.

The main issue for linear sites is quantifying their area of influence, i.e. the distance from which they would be seen as providing accessible greenspace. A reasonable compromise is to treat all linear greenspace as providing an experience equivalent to other sites in the ANGSt model, i.e. having an 'influence' extending to the same degree. It is recognised that this is an entirely subjective approach, but it is one that acknowledges the special nature of linear greenspace, whilst ensuring that its inclusion works within the parameters of the ANGSt model.

For accessible natural greenspace sites with considerable areas of water (for the most part reservoirs), it was decided that the water element provides part of the semi-natural environment, and thus affects the perception of the size of the site by a visitor. Therefore, where a water body is part of a site, its area should also be included. This may make a significant difference on reservoir sites – if only the accessible land surrounding a water body were to be considered, the site would be defined as considerably smaller than its actual size.

Although PPG 17 recommends the categorisation of greenspaces by 'primary function', there is potential to develop the consideration of greenspace multi-functionality, allowing the inclusion of sites with other primary functions, e.g. recreation, if they contain a significant element of accessible natural greenspace.

Developing quantity standards for natural space provision

To achieve this project across its identified tasks, we undertook a range of necessary analysis of background and context relating to:

1. the existing use of the ANGSt standard, to draw upon its successes and limitations
2. the use and promotion of ANGSt to date
3. the climate of policy-led standards since ANGSt was developed
4. relevant examples in the UK and overseas
5. analysis of the context in which decisions are made (now and in the future) in the UK on developer contributions, drawing upon examples and practitioner experiences.

We then looked at issues arising from using ANGSt in its current form to assess greenspace provision, notably measurement of accessibility, and the effects of population pressure.

Since the inception of this work, a study has come to light on the current application of ANGSt in a number of local authorities (Land Use Consultants 2008), and the findings from this have been drawn upon and expanded in the development of sample standards.

Background and context

1. The existing use of the ANGSt standard

The ANGSt model has its origins in a paper by Box & Harrison (1993), published in *Town and Country Planning*. In this paper the case for standards was made, based on a review of the functions and values of natural greenspace as a provider of experience of nature to local communities, and to improve the environment and protect its biodiversity. This work was further developed by Harrison et al (1995) in a research report, published by English Nature, entitled *Accessible natural greenspace in towns and cities: a review of appropriate size and distance criteria*, which subsequently became the basis for ANGSt. This report reviewed the available scientific literature and concluded that provision of natural greenspace in urban areas should be governed by a hierarchy of size and distance criteria, in order to maximise the benefits associated with accessible natural greenspace, namely:

- promoting human well-being and quality of life
- conserving urban biodiversity
- moderating urban micro-climates
- attenuating pollution.

English Nature subsequently adopted these standards and published the leaflet *A Space for Nature* to promote them.

The standard is included as a model in the companion guide to PPG 17 (Office of the Deputy Prime Minister, 2002a, b), and in 2005, a report on green infrastructure produced on behalf of a range of regional and national organisations considered that *"The English Nature Greenspace Standard is regarded as having the best fit to Green Infrastructure Planning"* (Davies, C., et al., 2005).

Although ANGSt was designed primarily for the urban context, its areas of search (up to 10 kilometres) will extend from towns and cities into rural areas. The ANGSt model can therefore be used to assess the role of natural greenspace at the local level, as well as enable an analysis of how natural greenspace in the wider countryside contributes to open space provision for both urban and rural populations.

ANGSt has been implemented widely in the UK. For example it has been used to analyse accessible natural greenspace provision in the South East, which has led to counties adopting the standard in their own local surveys (e.g. Buckinghamshire). It has been piloted in London and adopted as an indicator in area manifestos, and it is used to underpin many other local green infrastructure studies (for example in Lancashire and East Staffordshire). In the outcomes to make Peterborough the UK's greenest city:

> *" ... Peterborough to have the highest proportion of UK priority habitats in favourable condition compared to any other Local Unitary Authority by 2015; all Peterborough homes to exceed Natural England's Access to Natural Greenspace Targets (ANGSt) by 31/12/2012; and Peterborough to have the highest provision of LNRs (relative to population) of any local unitary authority".*

Greater Peterborough Partnership Environment Capital Manifesto

The European project SWITCH also aims to use learning from Natural England's work, on persuading developers and house builders to incorporate accessible natural greenspace in their schemes, using the ANGSt standard.

As national policy agendas on the measurement of local government performance moves on to Comprehensive Area Assessment, with more emphasis on delivering Sustainable Community Objectives and setting local priorities, this is an interesting time in the history of the ANGSt standard. And with unprecedented housing growth proposed (and underway) in the UK, concentrated in areas of housing growth and renewal, it is an appropriate time to see how the ANGSt standard can be applied with other open space and recreational provision standards, to ensure that people living in these new developments have adequate access to natural greenspace. This provision, if we get it right, will contribute to health and well-being as well as the economic and environmental success of these new places.

2. The use and promotion of ANGSt to date

It is worth at the outset considering the capacity for promotion of open space standards, and also to ask what evidence is there that ANGSt is being widely used. To be useable the standard must be both aspirational and achievable. It must be easy to understand and implement, and have sufficient promotional resources and government and developer backing. The *Building for Life* quality standard promoted by CABE has the backing of the House Builders' Federation, the Housing Corporation, English Partnerships, Design for Homes, and the Civic Trust. Such a broad level of support should be sought for natural and semi-natural open space standards. We have assessed that ANGSt is used as a guide but not promoted or widely adopted in the context of securing developer contributions for natural greenspace.

Useful comparators, where marketing and promotion have proven effective in embedding a standard in the UK, are the Fields in Trust's (previously NPFA) *Six Acre Standard* and the Green Flag Award. These examples take a marketing-led principle to developing standards, which places more focus on a mutually satisfying exchange relationship between the promoter of the standard and its users. The Fields in Trust's (NPFA) update to the Six Acre Standard retains its prescription that six acres of recreational space are needed per 1000 population, which it describes as the *"industry-wide standard"*, and re-defines its qualitative content to include more design issues.

The success of the Six Acre Standard is arguably the simplicity of its message and its promotion by word of mouth through the peer network of local authority officers. The many pressures on the resources of local authority officers mean that simple calculators may be more appealing than complex and lengthy frameworks. It is therefore desirable to probe the recent review of this scheme to understand its success factors as part of this project.

Understanding the breadth of target markets for ANGSt is also useful here. As a comparison the Green Flag Award is not a mandatory standard, yet it appeals to local councillors who advocate its use as a local indicator, forming a secondary target audience for promotion of the scheme. So marketing ANGSt or a new standard to developers may be as important as targeting the primary audience of local authorities.

3. The climate of policy-led standards since ANGSt was developed

The climate of policy-led standards has moved on since ANGSt was developed. One key change is that the UK government's national indicator set now contains NI 197 *Improved local biodiversity – active management of local sites PSA 28*, which is being adopted by local authorities in their local area agreements. Going on the old principle of 'what gets measured gets done', it might reasonably be argued that local authorities adopting this national indicator will focus attention on investing in existing local sites, rather than seeking to create new areas of accessible natural greenspace, and therefore seek developer contributions to do so.

There is an underlying trend exposed here, of the upsurge in emphasis on quality of provision in greenspace management in the UK, since the report of the government's *Urban Greenspaces Taskforce* in 2002. For natural greenspace, qualitative issues include not only attracting individual priority species, but also people as users, adding to their experience of the natural world. Other popular quality standards bear this out. The Green Flag Award is not a mandatory indicator yet it is attracting a record number of applicants. It focuses on individual sites and their quality, as does CABE Space's *Spaceshaper* methodology, which draws upon qualitative perceptions of professionals and users on sites in order to steer investment in them.

CABE Space asks the question 'can you have too much greenspace?' in areas of housing growth and renewal, and argues against creation of more open space than can be effectively managed. So given that quality of open space has risen up the standards agenda, it would usefully be reflected in any new standard for developer contributions.

> *"In areas of low housing demand, there may also be more space than can be effectively managed. Here the challenge is to find appropriate uses and management regimes, perhaps taking the opportunity to create semi-natural space or to make the land both functional and productive."*

CABE, 'Start with the park: creating sustainable urban greenspaces in areas of housing growth and renewal', 2005

As well as the increasing blend between quantitative and qualitative standards, there is also a trend towards reflecting broader sustainability impacts. In 2005, all government departments committed to the UK sustainability strategy *Securing the Future* and its accompanying strategic framework. It marked a shift in policy emphasis to integrate social, environmental and economic outcomes and makes reference to natural environments thus:

> *"The issues we face are the need for better understanding of environmental limits, the need for environmental enhancement where the environment is most degraded to ensure a decent environment for everyone, and the need for a more integrated policy framework to deliver this."*

UK Government, 'Securing the Future', 2005

So an update to the ANGSt standard would also usefully place greater emphasis on broader sustainability impacts than just the quantitative provision of accessible natural greenspace.

4. Relevant examples in the UK and overseas

There are lessons to be drawn from experiences in the UK as well as overseas. Stafford Borough Council set out in 2006 to establish a system to secure developer contributions for biodiversity provision, and Calderdale Borough Council looks to ANGSt and Sport England's *Towards a Level Playing Field* to set developer contributions for open space provision in the context of playing pitch requirements.

Meanwhile in Melbourne, Australia, urbanisation, loss of native habitats and breaking up the landscape are considered the greatest threats to Australia's biodiversity. So a research project to re-imagine the Australian suburb is underway, which includes development of a software framework to bring together the latest ecological knowledge with planning and decision-making principles, in a systematic and replicable way. It will enable different planning scenarios to be assessed for their ability to support threatened species, and balance biodiversity outcomes with social and economic goals.

To reflect a potential greater emphasis on quality and sustainability of developer contributions it is also worth looking at other related standards. The Bo01 development in Sweden, for example, is noted for its quantitative standards for provision of biotopes and native trees in housing developments, through prescription of design codes to housing developers. It is worth noting here also that these design codes incorporate issues around designing out crime, such as delineation of private and semi-private space, and there is merit in incorporating these other issues into a potential new standard to avoid conflict with other standards commonly adopted by developers, such as the Association of Chief of Police Officers (ACPO) *Secured by Design* standards.

Looking at standards that accommodate the broader impacts of sustainability, we need to step out of the immediate arena of standards around setting developer contributions and look at broader systems approaches. The *Natural Step Framework*, founded in Sweden, addresses impacts on whole natural and social systems (say of a company's operations, product development or of the policies of a place), seeing tools and measurements as but one part of the process. It has been applied in the context of housing development (for example the Hammarby Sjodstad development in Stockholm), especially in the context of lessening the impact of the construction supply chain. It is possible (although perhaps not the primary aim of the framework's originators) to apply this systems approach to quantitative measurement to drive improvement, as demonstrated by Comparison International's PROBE tool for small businesses, and this is worthy of investigation in this project.

5. Analysis of the context in which decisions are made (now and in the future) in the UK on developer contributions, drawing upon examples and practitioner experiences.

To assess the potential application of ANGSt in the context of new developments, it is useful to refer to practitioner experiences in calculating developer contributions, as well as the standards themselves. In a number of local areas in the UK there are well established local policies and associated calculators, and monies have been generated and ring-fenced for generic greenspace or natural greenspace projects, for example:

> *"Since 2000, contributions of £522,625 have been sought towards improvements to parks and public spaces which were identified by the Greenspace Strategy as priorities for open space and recreation across the District. To date, schemes include Grasmere Road playing fields, Sharlston Common, Redhill Avenue, Milnsthorpe Playing Fields, Thornes Park and Saville Park both of which included equipped playspaces."*

Sustainability Appraisal for the Draft Developer Contributions Supplementary Planning Document, Wakefield

The practitioner experiences will range from establishing the policy and process internally, to the ease of its implementation, and the resulting level of success of such schemes in securing new provision of accessible natural greenspace or in maintaining existing ones.

It is worth noting at this point that any standard for provision of accessible natural greenspace would usefully be positioned as an opportunity to foster innovation with developers. Innovation being the 'mother of profitability', some developers will be keen to demonstrate new techniques to appeal to the increasingly discerning buyer that wants to believe they are living in a rural idyll, even in the most challenging urban settings. This may expose a tension that creative design is not a natural bed-fellow with prescriptive indicators (although note the Bo01 model above).

Practitioner experiences may also yield insight into tensions between national standards (e.g. Sport England's *Towards a Level Playing Field*, Fields in Trust's *PAD* etc). And, as intimated, they may identify issues beyond creation of new green infrastructure i.e. its long-term management and maintenance.

How developer contributions are handled (e.g. securing long-term management and maintenance contributions and new models of governance such as community land trusts) is arguably as important as generating the monies themselves. This hints towards going beyond simply developing ANGSt, to drawing together national agencies with an interest in developer contributions to join forces and give consistent national guidance to local authorities, and developers, so that there are not competing aims for contributions at a local level.

Ultimately any methodology to calculate developer contributions will have to be infinitely flexible to capture the complexity of needs at a local level – especially in light of what is now known to be required of green infrastructure in order to ameliorate climate change, and this is

an even more compelling rationale to integrating quality and wider sustainability needs into such a standard.

Looking at two extremes: new housing developments in a floodplain that comprise high density urban development with large areas of hard landscaping and paved front gardens, for example, will require far greater emphasis on sustainable drainage, maintaining active soils, and potentially routes for species to relocate – as well as any traditional habitat creation required as a result of loss of accessible natural greenspace. Conversely, in a more rural area, flood alleviation and benefits of active soils may not be an issue arising from a single development, but locally important species may suffer if development takes place in certain locations, and the combined effect of many smaller developments may call other needs into play.

This also indicates that ANGSt will need to be flexible enough to operate at different spatial scales, from single development to masterplan level. This does offer the opportunity to tie in with new frameworks however, for example the *Sustainable Framework for Urban Extensions* recently developed by Forum for the Future and soon to be launched by the South West Development Agency.

> *"Whilst large scale developments can make a substantial contribution to enhancing biodiversity, the majority of planning applications are small scale but they present opportunities for habitat creation and enhancement which can produce large scale benefits."*

Biodiversity Guidance for Developers in Midlothian

Analysing accessible greenspace provision using the ANGSt model

A detailed account of the methodology for undertaking an ANGSt analysis is provided in a toolkit report, produced in 2003 by English Nature (Handley, et al., 2003). In summary, the process involves identifying the study area and the relevant sources of data, filtering the data to meet the study criteria, and building an inventory of accessible natural greenspace. The mapping work is undertaken using a Geographic Information System (GIS). The ANGSt model is then applied to the inventory, with the results illustrating, for instance, areas of accessible natural greenspace provision and deficiency.

Accessibility

To measure the number of people served by accessible natural greenspace in a given area, each different (aggregated) greenspace size class had a buffer created around it, using GIS, which represented the distance (or area of influence) for each greenspace size class given in the ANGSt model. Thus, a site of at least 2ha was given a 300m buffer, a site of at least 20ha a 2km buffer, and so on. However, it is important to note that a 20ha site also has a 300m buffer associated with it, as it is utilised in principle in the same way as a 2ha site for those people who live within 300m. Similarly, a 100ha site, in addition to its 5km buffer, also has 300m and 2km buffers associated with it, and a 500ha site has a 10km buffer in addition to each of the other three buffers. So, for instance, if the nearest greenspace site within 300m of a home is over 500ha, it would still count as a 2ha site, as well as a 20, 100, and 500ha site, and would therefore satisfy each of these categories.

The number of households within each buffer was measured by 'clipping' (or cutting) the AddressPoint data to the buffer. The resulting number of households was then expressed as a percentage of the total population served by this size class of greenspace. The number of households or actual population meeting the ANGSt standard could therefore be measured for any protected landscape or administrative area.

Effect of population pressure

Whilst undertaking the ANGSt analysis for this study, it became apparent that it was necessary not only to look at the actual levels of greenspace provision, but also the extent to which each site is used, or, in other words, the potential pressure from 'local' populations (i.e. within the distances of the ANGSt model) on each area of accessible natural greenspace.

This analysis helps address a limitation of the ANGSt model, in that it does not state the quantity of greenspace that should be made available per head of population, but only that all households should have access to sites of a certain size within a certain distance of home. So for instance, a village of 1,000 people may have one 20ha site within 2km, and thus have that ANGSt requirement met. A town of 50,000 people may also have only one 20ha site within

2km, but although that ANGSt requirement would be met, the population pressure on that site would be much higher than in the village scenario, if no other site were available.

What is needed, therefore, to supplement the ANGSt model, is an analysis of the potential population pressure on all areas of accessible natural greenspace, taking into account the choice of available sites. A high level of choice of greenspace sites does not necessarily lead to low pressure on sites. Some of the most pressured areas of accessible natural greenspace occur where there are five or more buffer counts, indicating that these sites are close to high population centres, and arguably in need of greater local greenspace provision. High pressure on existing levels of greenspace is also likely to be exacerbated by any significant levels of new housing in these areas.

This is clearly a theoretical approach, but its advantage is that it shows the effects of restricted choice – if a large number of people have few sites to visit, the potential pressure will be very high. So, in areas that may appear to have reasonable provision, but which have a very high population density, the potential population pressure can be factored into the analysis, to provide some indication that provision on the basis of the ANGSt model alone may not be sufficient to meet people's needs. Equally, areas of poor provision are also likely to have highly pressured sites, particularly in areas with high population levels.

The limitation of this analysis is that it only takes into account local populations, and does not factor in non-residential populations which may also be visiting sites. Populations outside of the local area are unlikely to affect every site, but non-residential visitor numbers will be an important factor for promoted areas, particularly National Parks. To undertake an analysis that would include non-residential populations across all sites in the study area, the data on non-residential visitor numbers would need to be available for all sites, or at least those thought likely to have such visitors. These data were not available for this study, but this would be a worthwhile area for future analysis, particularly for protected landscapes, if sufficient non-residential visitor data could be obtained.

In a study of natural space in the South East using the ANGSt standard (*An analysis of accessible natural greenspace provision in the South East,* Patrick McKernan, Forestry Commission, and

Matthew Grose, High Weald AONB Unit), the most striking result was the lack of accessible natural greenspace within walking distance, with 80% of households not having access to a site of at least 2ha within 300m. This highlights the need for greater provision of small sites, close to where people live, but also implies that the existing distribution of greenspace is likely to result in people being reliant on the car to get to sites.

In the size classes greater than 2ha, the regional ANGSt results show that 66% of households have access to a 20ha site within 2km, 77% have access to a 100ha site within 5km, and 46% have access to a 500ha site within 10km. These results vary across different administrative levels, and in protected landscapes, although the lack of sites within walking distance is broadly similar across all areas. This report does not suggest acceptable thresholds for a given area – whether a high percentage (but less than 100%) is 'good enough', for example. It is worth noting, however, that the ANGSt model does not state a threshold (implying that 100% of a given population should meet all of the requirements), and that some areas do have the full standard met for their populations for at least one of the size classes.

Land Use Consultants report on ANGSt

English Nature reviewed ANGSt in 2003 (*Accessible natural greenspace standards in towns and cities: a review and toolkit for their implementation*, Handley et al.), and identified a number of problems in the application of the standards, particularly a lack of clear guidance, lack of statutory recognition, and lack of resources.

In order to address these limitations, Natural England have developed ANGSt Plus, a new national assessment framework for analysing the extent to which ANGSt upholds the original objectives of access to nature, but which also offers guidance on the implementation of ANGSt. An appraisal of this new framework and a study into the use of ANGSt was then commissioned by Natural England (*Understanding the relevance and application of the Access to Natural Greenspace Standard*, Land Use Consultants 2008).

This study of the greenspace strategies of 20 local authorities highlighted:

- still a lack of guidance on the effective implementation of ANGSt

- little recognition of ANGSt in national policy
- limited understanding in local authorities of the potential of greenspace strategies to inform local area agreements (LAAs) and thus secure investment, and also how investment in greenspace can contribute to the achievement of a range of National Indicators
- the standards are sometimes perceived as inappropriate in rural or densely urban areas
- lack of knowledge of funding streams
- lack of information on appropriate skills and delivery mechanisms
- the importance of design and management in people's perceptions and engagement with natural greenspace
- little involvement of Natural England or its representatives in the development of greenspace strategies

Many local authorities were not using ANGSt in their greenspace strategies, preferring locally adapted standards dictated by the distances people were prepared to travel, as promoted by PPG 17. In rural locations this could be translated into travel time, either on foot or by car, also in dense urban areas where public transport could be incorporated.

In public consultation it was found that the quality of greenspace was more important to people than quantity of provision. To this end many local authorities employ quality standards in assessment of their green spaces, for example the Green Flag Awards. However the criteria used for the Green Flag Awards are not always appropriate for natural greenspace, so greater guidance on quality criteria for natural greenspace, such as signage or site safety, could be useful.

Natural England uses the term 'connectivity', defined as "*an emotional and physical association between the community and local accessible natural greenspace, which encourages involvement, engagement and ownership of accessible natural greenspace*". There was confusion over the meaning of this term though, with many local authorities interpreting it purely in terms of physical links between people and green spaces. With residents placing high value on access to nature, there is a need for local authorities to promote public engagement with green spaces, for example through organised events, education and outreach, employment of local wardens, or through the location of new green spaces in close proximity to community-based buildings in order to encourage links between the two.

Requirements for enhanced standards of provision

In addition to the issues raised by the Land Use Consultants report, new proposed standards for the provision of accessible natural greenspace will need to address the following:

- an understanding of the relationship between an approach that has relevance to local situations and simplicity of calculation
- application to both local authorities and developers
- reflection of quality and sustainability of greenspace as well as quantity
- avoiding conflict with other standards used by developers e.g. ACPO *Secured by Design*
- investigation of systems-based approaches
- taking into account practitioner experiences
- presentation to developers as an opportunity for innovation
- encouragement of national agencies to join forces and provide consistent national guidance.

Analysis of international examples

The examples identify the wide scale upon which UK policy could be positioned: from prescribed local quantitative and qualitative standards, and local policy principles of planting locally native species; to pooling major developer contributions over time towards large wildlife parks. An additional area of interest is developer contributions towards national programmes – not specifically for natural greenspace creation and management, but to protect indicator species of national importance, and promote a ripple effect of creation of natural green spaces in local areas, through public information programmes. Indeed the community leadership in creating and enhancing natural greenspace is an area of interest that fits UK government agendas for community empowerment and involvement in the planning system. However, no examples of linking these agendas to developer contributions has been identified in this study, and it would be worthy of further investigation.

The principle of prioritising calculation of broader open space to specific quantity of accessible natural greenspace is noted from international examples, as per many UK ones. This is at the discretion of local officers alongside aspirations in local plans. However, notably from the international examples, it can usefully be combined with 'up front' prescriptions of natural biotopes, as per the Bo01 Malmo, and Seaside Florida examples. Here some remarkable results have contributed to local sustainable development with notable economic, social and environmental impacts. The potential for inclusion of these prescriptions in local development frameworks in England (especially in areas undergoing housing growth), as opposed to planners simply responding to individual development proposals, could therefore create similar benefits and be in keeping with the spirit of PPS 1. A prime example is corridors of locally native tree planting: to provide shade and wind breaks for the comfort of pedestrians; movement corridors for species; and local character to bring economic investment to an area.

International examples appear to place an enhanced emphasis on natural greenspace as a contributor to enhancing storm water drainage, through providing sustainable drainage on-site e.g. in rain-gardens, soak-aways, greywater ponds in gardens and in opening up culverts (further discussion with the Environment Agency and water engineers would be useful here on policy principles). This hints at the greater emphasis on greenspace at the infrastructure level. As a UK example on this theme, the Tees Valley Infrastructure Strategy notes that public sector funding alone is unlikely to cover the capital and revenue costs of green infrastructure identified in the strategy. It advocates a range of funding mechanisms to invest in green infrastructure in the sub-region, including public-private partnerships as well as public sector investment, and it notes that much of the delivery will come through the development process.

A further observation on the international examples with implications for UK policy is the definition of a wider package of measures that will make a place liveable, in which natural greenspace sits alongside sustainability and safety and security measures. In Bo01 the Quality Plan included standards that provided safe and secure public realm. Hence there may be merit

in incorporating other issues relating to wider sustainable development into any potential new standard(s) in the UK. A further reason to do this is to avoid conflict with other standards commonly adopted by developers, such as the Association of Chief of Police Officers (ACPO) *Secured by Design* standards, which can appear to advocate reduction of benefits of natural greenspace (perceived to allow concealment). A potential broader package of standards for sustainable communities for local development frameworks, of which natural greenspace would be a key component, would be worthy of further study, drawing in partners such as communities, local government, and the Home Office.

Communication also emerges strongly from international examples as a complement to any standards. The Bo01 Malmo example emphasises the benefit of continued regular dialogue with developers. The Australian Biodiversity Toolbox highlights the variety of information needed to enable setting of local standards, and takes a useful integrated 'portal' approach, which might usefully complement any new UK standards for developer contributions. Indeed, this approach could be adopted by a partnership of UK agencies as a portal for all community benefits of developer contributions. In this way natural greenspace might be seen as a more equal player for receipt of developer contributions, given the often locally-competing needs for recycling, recreation provision etc.

Nb. Issues specific to international examples that might reduce transferability include the high car ownership in Australia, so that 'accessibility' of any open space is considered available to all as a given.

Recommendations

It is recommended that the ANGSt standard be developed to allow for its greater adoption as a tool for delivering natural greenspace, and in particular in setting standards for natural space provision associated with new developments. The ANGSt standard is predicated mainly on accessibility, and it is recommended that elements of quantity and quality be introduced, particularly for the local provision element of the standard. An approach that could accommodate all three factors: accessibility, quantity, and quality, may look something like this:

Type of Space	Quality	Access		Proposed minimum size	Proposed quantity	Proportion to be met from developer contributions (where appropriate)
		Time (mins)	Distance straight line		ha per 1000 population	
Local greenspace with potential for delivering biodiversity	Primarily for recreation, medium to low biodiversity value	5	240m	No minimum	0.2	100%
Natural play space	Medium value for biodiversity, high play value	10	480m	500m^2	0.1	100%
Country park / natural greenspace / LNR	Medium to high biodiversity value medium recreation value	20	1 km	No minimum	1.0	50%
Local woodland / heathland / wetland / upland	Medium to high biodiversity value high recreation value	N/A	5 km	100 ha	To be determined against local measures	Pooled contribution calculated at 20% of ha per 1000
District or sub-regionally significant natural space	High biodiversity and high recreational value	N/A	10 km	500 ha	N/A	Pooled contribution by negotiation based on need for amelioration measures to existing sites

Notes:

For sites of 100 ha and above where the quantity is determined locally, this will be calculated with reference to current levels of provision. These will vary between urban and rural areas and will be based on quantities of qualifying spaces against populations by ward, defined as either urban or rural wards, at local authority administration areas of District Council and above.

Value to be assessed against a set of nationally based criteria that describe what is meant by a high, medium or low value site

Further work

Further work to be carried out includes:

- Market research with target users (suggest a phone survey with a sample of 50 practitioners and four regional focus groups) to gauge their needs and identify what standards and methodologies for calculation of developer contributions for natural greenspace they already use.

- Develop a set of nationally-based criteria that describe what is meant by a high, medium and low value site in terms of biodiversity.

- Stakeholder review of the competing demands on developer contributions, to identify ways to integrate needs for natural greenspace with wider provision for leisure, recreation and education priorities. Propose three meetings of a national stakeholder group during the project to include CABE Space, Fields in Trust, Sport England, Encams, ISPAL, GreenSpace, Association of Chief of Police Officers (ACPO) etc.

- Identify four to six hosts to test the draft matrix and apply it. This will entail setting up phone and written communications, drawing results from each pilot, and convening a group of pilot hosts three times during the duration of the project to compare experiences.

- Write up the experiences in a report and make conclusions as to suitability for wider application or further developments needed.

- Identify five potentially useful policy models, and undertake wider qualitative research into their success with their originator organisation and up to five other stakeholders in each example.

International Examples

1) Developer contributions for doorstep natural greenspace

Vignette – Wingecarribee Shire Council, Australia

Characteristics:

- Calculation of natural greenspace within generic open space calculations
- Pooling developer contributions
- Securing contributions for drainage infrastructure e.g. on-site retention

Wingecarribee Shire Council has a calculator for open space contributions, although it seems to be focused on amenity for the public and does not separate out any contribution specific to natural greenspace. The spend on natural greenspace as a proportion of open space is presumably at the discretion of the Council, and links to its shire-wide needs study (similar to a UK PPG 17 audit).

The calculator links to developer contribution plans on the specific contributions that can be made, including an open space and recreation plan. This plan expressly authorises monetary Section 94 contributions, paid for different purposes, to be pooled and applied (progressively or otherwise) for those purposes. The priorities for the expenditure of the levies are then shown in the works schedule. Examples given of priorities range from recouping monies paid for the shire-wide plan, to preparing management plans and improvements to unnamed reserve areas. However, there are no identified natural greenspace works in the adopted 2007 plan.

Wingecarribee also links its developer contributions for storm water drainage to a contribution plan that identifies drainage infrastructure needs in different precincts. It notes, "*As vacant land is developed, the quantity of run-off is increased and quality decreased. This has an impact on downstream receiving waters which must be addressed by proper drainage planning practice*". It also notes, "*In certain circumstances, a developer may seek to offset his Section 94 contribution by constructing an on-site retention facility*", although it notes limitations to this in the area, and the priorities are augmenting culverts, hydraulic efficiency of a main channel and constructing an upstream retention basin.

The Council also resolved to adopt a *Sustainability & Design Criteria for New Urban Residential Development*, to become effective from May 2008, which was unavailable at time of writing. It will consider this policy in the assessment of new urban release areas across the shire. All new urban release area applications are to include a statement addressing the provisions of this policy in their submission.

http://wingecarribee.local-e.nsw.gov.au/planning/1281/4670.html

Vignette – Land for Wildlife, Queensland, Australia

Characteristics:	• Voluntary agreement on land management for natural greenspace • Leadership by local government

Land for Wildlife is a voluntary non-binding agreement to manage land for nature conservation purposes, supported by local extension officers who provide management advice. In Queensland and the Northern Territory, Land for Wildlife is being delivered by local government.

http://www.epa.qld.gov.au/landforwildlifehttp://www.epa.qld.gov.au/landforwildlife, http://www.nre.vic.gov.au/ and search using keywords 'Land for Wildlife'

Vignette – Seaside, Florida, United States

Characteristics:	• Blanket local policy in favour of locally-native species and naturalistic planting • Recognised marketing benefits of neighbourhoods with natural landscapes • Recognised local economic benefits

A prescriptive local policy to encourage native habitats is proving successful in Seaside, Florida. Here, turf grass is banned and only locally native species can be planted. This includes native species of wildflowers, trees and shrubs and applies to all private yards. The effect is apparently remarkable: "*verdant neighbourhoods of shrub-scrub dune vegetation, with its related birds and wildlife — and the residents love it*". The concept is to deliver real estate with the marketing edge of high-quality landscape. Uplift on property values has been noted as a result: the naturally-landscaped homes are selling for a higher premium than those with more traditional gardens and yards. Other local economic benefits include positive effects on the business of nurseries and landscape architects that are adopting this approach. Additional local benefits include creation of woodland corridors that not only provide a movement corridor for wildlife but also add to the local character. And the added value of reduced storm water runoff is also noted. From the program, a list of key points to stress has been distilled. Whilst reduced cost of maintenance is arguable, it is a useful checklist:

Benefits of natural landscapes:

- Reduced maintenance costs
- Low maintenance
- Less yard 'waste'
- Water savings
- Improved water quality
- Improved soil aeration
- Reduced storm water runoff and improved water table
- Reduced soil erosion
- Reduced air and noise pollution because less mowing is required
- Reduced electric use and cost
- Creation of distinctive and attractive properties that preserve local identity
- Greater visual interest and diversity
- Habitat restoration and protection
- More leisure time
- Recreation.

http://pubs.cas.psu.edu/freepubs/pdfs/uh142.pdf

Case study – Bo01 development, Malmo, Sweden

Characteristics:

- Points system for naturalistic biotopes included in a Quality Plan, against which city planners 'scored' developers' plans
- Absence of prescriptive national indicators
- Emphasis on one-to-one communications
- Engagement of landscape architects early in developers' plans
- Expanded remit of city designer across planning, highways and parks

The new residential area in the Western Harbour of Malmo, Sweden's third largest city, is much vaunted as good practice by design champions such as CABE. Malmo urgently needed a housing area that was known for providing good living in Sweden. Bo01 reflects a national will to return to the reputation Sweden had in the 1940s and 1950s for good social housing. Now Sweden will be known for 'green building'.

The new Oresund Bridge (from Copenhagen to Malmo) was an opportunity – but also a threat – so the city needed a defined offer to capitalise on it. Political understanding that ecology was part of the construction is cited as critical to success. This was a challenge since the range of benefits was not felt for two political terms. It has paid off however: since 2000 public spaces have featured in the top five attractions for residents and are what people show to their friends. The city designer, Gunnar Ericsson, was responsible for leading the development. Of note is that his role includes town planning, highways, public spaces and parks, and that his personal commitment in this role has spanned over a decade.

Competitions were held for all the public spaces, streets and parks. Developers signed up to a minimum quality standard for provision of open space, but regular meetings between the city design team and developers ensured a higher standard to meet the city's aspirations. High quality design of public open spaces was achieved at a time when the political agenda in Sweden had led to dispensing with national standards, which is described by the then principle city landscape architect, Agenta Persson, as a great obstacle to success. She advocates strong communications along with any prescribed standards. Persson says that mandatory standards for natural open space would have made the job a lot easier, and "*Previously in Sweden we were good at having restriction and rules, now we can only recommend e.g. on basis of proximity to a neighbourhood*".

Persson's specification of different naturalistic biotopes was written into the Quality Plan, for which developers scored 'points' in their proposals. For example the three biotopes in the public park were woodland, savannah and water planting. She cites the three-weekly face-to-face meetings as critical to success. Persson upholds that the outcome was not as high quality as she had originally intended, and she is disappointed that the quality standards have not been further developed as new areas of development are being added. Nevertheless the effect is a

conspicuous aesthetic: there is a naturalistic feel at the water's edge in public areas with water plants that are kept tall in the winter; the courtyard gardens are wildlife havens with plentiful overlooking opportunities for residents to interact with nature; and green and brown roofs prevail throughout the new area.

Persson also 'forced' architects to engage landscape architects early, to ensure the courtyard gardens were the best they could be, through her specifications in the plan. Persson said, "*I made it so difficult for them they had to get a landscape architect. With this green area factor, the developers accepted it, but they didn't really understand it. Early appointment ensured deep enough planting holes for trees to be planted in and at least 80cm soil depth on roofs for green roofs to be planted. I had two aims: as good possibilities for plants as possible, and to see water from every courtyard*". There was also a mandatory condition on developers to buy and plant trees two years before the developments took place.

Financially, new developments pay for the public spaces, but there was a lot of public investment up front to ensure quality in the streetscape. Financial agreements on public space provision were calculated around square meterage of exploitation, rather than of land. There was no designated proportion for natural greenspace, explained as being due to city planners not wanting the extra work of checking the proposals. Developers at first said the provision of open space was too expensive. Persson is pleased that the whole of Bo01 can be described as playful – especially since demand on designed play spaces has far outstripped supply, including the naturalistic planting. It is worth noting that the prescribed design codes incorporate issues around designing out crime, such as delineation of private and semi-private space.

With grateful thanks to Gunnar Ericsson, city designer and Agneta Persson, principle landscape architect on Malmo Bo01.

2) Pooled developer contributions for sites of regional significance

Vignette – Northeast Region Wildlife Mitigation Park Program, United States

Characteristics:

- Pooling large contributions from major developments over time
- Contributions to a single wildlife park of regional significance
- Relocation of threatened species

On December 8th 1988, The Florida Times Union reported that a piece of land was to be purchased under the Northeast Region Wildlife Mitigation Park Program, using developer contributions by large developers in lieu of having to set aside land to preserve wildlife habitat on their development sites. Therefore, instead of protecting small pockets of wildlife on small parcels of land on these sites, a large preserve would be created in the region. The site chosen would already support particular species that were endangered, threatened or of special concern, and wildlife from sites under development would be relocated there. A couple of years earlier a Jacksonville developer was permitted to donate $180,000 to develop a preserve elsewhere to their development. It was anticipated that this sum would be combined with theses new developer contributions and invested in the large preserve.

References: *Large Preserve Sought With Developers' Contributions*, The Florida Times Union

Abstract in The Florida Times Union Article December 8, 1988. Held at: Levin College of Law, University of Florida

http://www.uflib.ufl.edu/ufdc/?m=hd1X&i=47310&vo=01

3) Pooled developer contributions for national programmes

Vignette – Alcoa Frog Watch, Western Australia

Characteristics:

- Developer contributions towards programme on nationally important indicator species
- Provision of demonstration sites to educate public and stimulate their own action

In Australia, native populations of frogs are considered a good indicator of the overall health of the natural environment. Noting their decline in Western Australia in the 1990s, Alcoa Frog Watch was founded in 1995 to preserve native frog populations and promote education for future generations. It is not clear from the Frog Watch website exactly how developer contributions are calculated towards the program. The program advocates a community-led approach to creating frog-friendly habitats at a diversity of scales. It notes demonstration sites that have been constructed including Parks Victoria's Serendip Sanctuary, Pearcedale Conservation Park, and one in Portland. It notes opportunities for household grey water wetlands, and references bioremediation and phytoremediation.

4) Communications programmes on developer contributions

Vignette – Australian Government Biodiversity Toolbox

Characteristics:
- Communications programme to enable setting of local standards for open space or brushland

The Australian Government's Department of the Environment, Water, Heritage and the Arts advises that developer contributions or levies can be required by a local council to provide the community with open space or bushland. Section 94 of the Environmental Planning & Assessment Act 1979 allows councils to collect contributions from the development of land in order to help meet the additional demand for community and open space facilities generated by that development. Nb. developer contributions for water and sewer services are collected under Section 64 of the Local Government Act. The Australian Government provides a 'biodiversity toolbox' that includes benchmarking advice, planning indicators and links and contacts. Specifically it references three key examples regarding developer contributions: Wingecarribee Shire Council, Alcoa Frog Watch and a Market-Based Instrument Program. Summaries of these examples are provided elsewhere in this document. The Wingecarribee Shire seems to be the most relevant in the context of this project, however on desk-top study it does not seem to go any further than a plethora of UK examples of calculating developer contributions for open space, and would be worthy of further investigation.

http://www.environment.gov.au/biodiversity/toolbox/tools-resources/incentives.html#developer

http://www.environment.gov.au/biodiversity/toolbox/tools-resources/incentives.html

5) Research programmes on developer contributions

RMIT program Melbourne, Australia

It is commonly understood in Australia that urbanisation and fragmentation of the landscape, with the associated loss of natural species, are the greatest threats to its biodiversity. A programme has emerged: Re-imagining the Australian Suburb, at the Royal Melbourne Institute of Technology (RMIT), that includes development of a software framework. This will draw together leading ecological knowledge with principles of planning and decision-making, and so enable assessment of diverse planning scenarios for their ability to support threatened species and balance outcomes across the social, environmental and economic goals of sustainable development.

RMIT is comprised of the following clusters:

Copyright RMIT program

The programme notes that the common approach to planning and decision-making in the suburbs and edges of towns and cities excludes expert ecological knowledge. Although this may not be necessary for decision-making, the programme notes that the latest information needs to be made available to inform it, including on wider strategy.

Sponsors include the City of Whittlesea, Department of Sustainability and the Environment, Hume City Council, Port Philip and Western Port Catchment Management Authority, and Stockland. The project collaborators are RMIT University, the University of Melbourne, and the Department of Sustainability and Environment. Early research reflects their combined first attempt to apply and test modern systematic planning tools in the context of urban biodiversity planning.

www.rmit.edu.au/RE-IMAGINING

Market-based Instrument Pilot Program, Australia

In 2005 Australian government ministers announced a further $5million in extra funding, to identify how to use market-based instruments to secure gains for natural resource management. These are considered a useful new tool, using trading mechanisms, auctions and price signals to positively influence behaviour of those managing natural resources and environmental assets. Projects identified in this second round include one at Mount Lofty – Kangaroo Island – Northern Agricultural District, in which the project aims to improve cost-effectiveness of its round one pilot, which was on *Catchment care: developing an auction process for biodiversity and water quality gains*. It intends to do this through enhanced measurement of environmental benefits and the use of an improved bid selection algorithm that incorporates biophysical synergies and landholder bids.

Contacts

Department of the Environment, Water, Heritage and the Arts

GPO Box 787 Canberra ACT 2601 Australia Telephone: +61 (0)2 6274 1111

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Introduced by the New South Wales Government, BASIX, the Building Sustainability Index, ensures homes are designed to use less potable water and be responsible for fewer greenhouse gas emissions by setting energy and water reduction targets for house and units. BASIX is one of the most robust sustainable planning measures in Australia, delivering equitable and effective water and greenhouse gas reductions across New South Wales.

Land for Wildlife is a voluntary non-binding agreement to manage land for nature conservation purposes, supported by local extension officers who provide management advice. In Queensland and the Northern Territory, *Land for Wildlife* is being delivered by local government.

Land for Wildlife contacts:

Qld: http://www.epa.qld.gov.au/landforwildlife

NT: contact lfw@astc.nt.gov.au (Alice Springs Town Council) or sally.jacka@lsc.nt.gov.au (Litchfield Shire Council)

or http://www.nre.vic.gov.au/ and search using keywords "Land for Wildlife"

http://www.environment.gov.au/biodiversity/toolbox/tools-resources/incentives.html

http://www.environment.gov.au/biodiversity/toolbox/tools-resources/incentives.html#developer

http://wingecarribee.local-e.nsw.gov.au/planning/1281/4670.html

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