



PLANNING FOR BROWNFIELD BIODIVERSITY

A BEST PRACTICE GUIDE



Brownfield sites are prioritised for development yet can be incredibly important for wildlife.

This Guide demonstrates how sustainable reuse of previously developed land can be achieved.



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Introduction

Brownfield biodiversity presents a unique challenge to planners. On the one hand planning policy dictates that a high proportion of new development should take place on previously developed or brownfield land; yet current biodiversity policy and legislation requires that UK Biodiversity Action Plan (UKBAP) Priority species and habitats should be afforded protection and that the biodiversity interest of brownfield should be retained. This guide aims to provide some practical solutions to achieving sustainable reuse of brownfield land, for all those involved in planning and implementing new development.

Brownfield land can support an extremely rich diversity of wildflowers and animals, and even has its own UKBAP Priority habitat 'Open Mosaic Habitats on Previously Developed Land'. Many brownfield sites have been designated as Sites of Special Scientific Interest, Local Nature Reserves and County Wildlife

Sites. National planning policy requires that this biodiversity interest is retained, although this can often come into conflict with economic priorities.

The presence of brownfield biodiversity need not be a constraint to development. There is still an extensive stock of previously developed land in England, much of which can be built on with a relatively low environmental impact. However the sustainable use of brownfield land will require a more selective approach to which sites are suitable for development, and which should be protected as an asset for people and wildlife. Many of the policies and tools to achieve this are already in place. Often it is low awareness of the ecological value of brownfield land – and a corresponding lack of environmental information – which causes its biodiversity to be overlooked, leading to the development of sites of significant wildlife value. Invertebrates (including protected bumblebees and butterflies) are especially affected, and are hence a focus of this guide.

KEY RECOMMENDATIONS

Key Recommendations

Better ecological information, at the right time: Planning authorities should ensure that the allocation of brownfield sites in forward planning is informed by data on their biodiversity value, so that sites of high value aren't prioritised for development. Likewise planning authorities should ensure that there is an adequate assessment of brownfield biodiversity (including full ecological surveys where appropriate) to inform development control decisions.

Protect key sites: Planning authorities should ensure that the most important sites for biodiversity – brownfield or otherwise – are properly identified and protected through local authority planning policy or, where appropriate, statutory designation.

Consider the wider environment: The value of brownfield sites in contributing to wider ecological networks needs to be properly considered in planners' decision-making. The wider impacts of developing a brownfield site – for instance, the contribution that it makes to the provision of ecosystem services – should be assessed when considering the environmental constraints to development, and should be used to inform decisions on different brownfield re-use options.

Green Infrastructure: Biodiversity-rich brownfield sites should be recognised for their potential to deliver high quality Green Infrastructure, for people and wildlife. Information on the amenity and biodiversity value of brownfield sites should be taken into account during the development of green grids/Green Infrastructure.

Get the Greenfield/brownfield balance right: Planning decisions should aim to protect and enhance biodiversity wherever it occurs, including on brownfield land. Brownfield sites that have blended into the landscape should be treated in the same way as Greenfield land (as outlined in PPS3).

Retain existing habitats: The masterplanning of a brownfield site should seek to retain and integrate existing wildlife habitats and features within new development, rather than attempting to recreate them subsequently. This can help to reduce the need for costly mitigation and compensation.

Incorporate new biodiversity features: The design of new development on brownfield land should incorporate new habitats and features of value to brownfield wildlife, through innovative habitat creation within landscaping and built structures (such as living roofs and green walls).

Secure long-term management: Long-term management and monitoring for biodiversity should be secured through appropriately worded planning conditions and Section 106 agreements.



BROWNFIELDS, BIODIVERSITY AND PEOPLE



Above: Some brownfields can act as outdoor classrooms and provide valuable opportunities for people to interact with nature

Brownfields, biodiversity and people

Brownfield sites can provide valuable opportunities for people to have access to the wildlife on their doorstep, and if managed properly can be a powerful driver of sustainable regeneration. Government policy is just starting to recognise the social and environmental contribution that naturalised brownfield sites can make in urban areas, even though the public have been using and enjoying such sites unofficially for decades.

The benefits that green (or brown) space provides to human wellbeing are well documented, and include health, recreation and access to wildlife. Recent studies have found that the psychological benefits associated with green space increase as biodiversity increases (Fuller *et al.*, 2007). Natural England recognises this value in their Access to Natural Greenspace Standards, a strategy which acknowledges the integral role that biodiversity plays in sustainable urban communities.

The contribution that natural green space makes to people's quality of life is also recognised in *Planning Policy Guidance Note 17: Planning for Open Space, Sport and Recreation*. This states that open space of high quality or of value to a local community, including areas that particularly benefit wildlife and biodiversity, should be recognised and given protection by local authorities. Many regions have mapped out areas of green space of amenity and biodiversity value, and these 'green grids' are increasingly being adopted as Supplementary Planning Documents, as a further means by which the planning system can help to deliver sustainable development.

PPG17 requires that biodiversity-rich brownfield land should be recognised in strategic plans for its potential to deliver Green Infrastructure. However to date the potential contribution that existing brownfield land could make to the provision of green space in both new and existing settlements has yet to be fully realised beyond a few flagship sites. Local authorities and green grid partnerships therefore have an important role to play in properly assessing the amenity and biodiversity value of brownfield sites, and taking this into account during the design and development of functional Green Infrastructure that will benefit both people and wildlife.

Suggested further reading:

Handley et al. (2003), *Accessible Natural Greenspace Standards in Towns and Cities: A Review and Toolkit for their Implementation* English Nature Research Report No. 526 (can be downloaded from www.naturalengland.org.uk/publications)



Right: The UKBAP Shrill carder bee (*Bombus sylvorum*)

BROWNFIELDS: A HAVEN FOR BIODIVERSITY



Above: *Disused railway lines can provide important corridors for wildlife*

Brownfields: a haven for biodiversity

There is still a lingering perception that brownfield sites are neglected wastelands that are devoid of interest, either for people or for wildlife. Yet biodiversity often thrives in such apparently abandoned situations, where decades may have passed since human activity took place. Recent studies have highlighted that brownfield land is often the best or only available habitat for many rare and endangered species, including many UKBAP Priority species, not just in urban areas but in the wider countryside too. Indeed the invertebrate rarity and diversity of some brownfield sites is only equalled by that of some ancient woodlands (Barker, 2000) – a remarkable fact when you consider that while it can take hundreds of years for a woodland to mature, a brownfield site has often only been in existence for a few decades.

Brownfield sites also play a part in maintaining the biodiversity of the wider area. As important reserves of biodiversity in urban areas, the loss of brownfield sites is likely to reduce the amount of wildlife we see in our gardens and parks. The value of brownfield sites in contributing to wider ecological networks, as well as the provision of 'ecosystem services' such as pollination, should be an important consideration within the planning process. The wider ecological importance of a potential development site should be considered when assessing environmental impacts, in much the same way as the potential impact on neighbouring areas with statutory designation (such as Sites of Special Scientific Interest) is evaluated.

Key features of a biodiversity-rich brownfield site



Left: *patches of bare ground can provide important nesting areas*

The reason why wildlife-rich brownfield sites are able to support such high biodiversity can be summed up in a single word – **variety**. Some of the key features that contribute to this variety are summarised here.

Artificial substrates, such as cracked and crumbling concrete, coupled with a lack of topsoil produce a nutrient poor growing medium. These **low nutrient levels** prevent fast growing species, such as grasses and nettles, from dominating, and thus promote **high plant diversity**. The lack of topsoil may also result in dry conditions, and the drought-stress that this causes encourages **high flower abundance**. This high plant diversity leads to high animal diversity; each species of plant is likely to have its own associated invertebrate species which will feed on the plant itself, or on the nectar and pollen provided by the flowers. These invertebrates will attract yet more wildlife, including other invertebrates, reptiles, birds and mammals.

Within these areas of high plant diversity and flower abundance, patches of **bare ground** and exposed earth banks, which may be a result of public use of the site, can provide important nesting areas for invertebrates. This **disturbance** leads to various stages of succession within sites, adding to the all-important variety. **Sparsely vegetated areas** are also important to many species, with rubble and bare ground providing a sunny spot for invertebrates and reptiles to bask in.

The remains of hard surfacing and foundations will affect the drainage of the site, and can produce **seasonal and permanent water bodies**. Coastal and estuarine brownfield sites can support saline-influenced areas that mimic saltmarsh habitats and provide homes for several UKBAP species.



Left: *The UKBAP Sea aster mining bee (Colletes halophilus)*

BROWNFIELDS AND THE UK BIODIVERSITY ACTION PLAN

Many invertebrates either live or over-winter in plant stems, leaves or seedheads. For these animals it is the **lack of management** on brownfields, specifically the lack of mowing or grazing of grasslands, that makes these sites so important for their survival.

This diversity of habitats (often referred to as a **habitat mosaic**) combined with lack of management is the key to the wildlife value of brownfield land. But why is so much rare biodiversity increasingly restricted to this largely urban habitat? Put simply,



6 Above: An urban brownfield site showing a variety of plant species and open areas for sun-loving invertebrates and reptiles

Brownfields and the UK Biodiversity Action Plan

Planning authorities have a legal duty to 'have regard to the conservation of biodiversity' under the Natural Environment and Rural Communities (NERC) Act. In particular it should be noted that the presence of UKBAP habitats and species is a material consideration in the determination



Above: An 'Open Mosaic Habitat on Previously Developed Land'

the countryside no longer provides the abundance or variety of habitats that many species need. Where habitat mosaics were once common in the wider countryside, intensive farming has now made these increasingly hard to find. While nature reserves are often small and isolated, brownfield sites tend to cluster around ex-industrial areas and estuaries. These provide a sizeable mosaic of habitats which collectively support populations of species which can't survive in the long-term on small reserves due to issues with population size and inbreeding.

Suggested further reading:

Buglife, *Brownfields* leaflet. (This is suitable for a general audience. For hard copies please email info@buglife.org.uk. Not available electronically)

Buglife (2008), *Thames Gateway Brownfields: invertebrate biodiversity and management* (can be downloaded from www.buglife.org.uk/aboutbuglife/publications)

Gibson, CWD (1998), *Brownfield: red data. The values artificial habitats have for uncommon invertebrates* English Nature Research Report No. 273 (can be downloaded from www.naturalengland.org.uk/publications)

of planning applications. Early consideration of biodiversity by a planners is therefore important and the changes to planning application validation requirements (see page 12) provide an opportunity to facilitate this.

Open Mosaic Habitats on Previously Developed Land

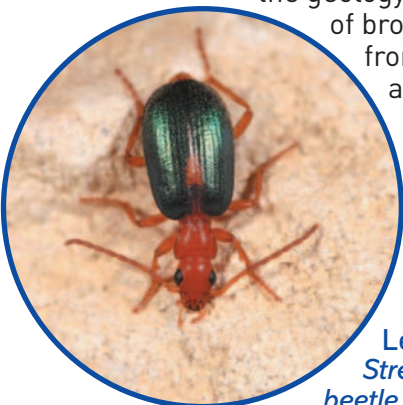
The importance that brownfield sites have in supporting biodiversity has been recognised by the Government in the UKBAP Priority habitat 'Open Mosaic Habitats on Previously Developed Land'. This means that wildlife-rich areas of brownfield land are regarded as a priority for conservation, and public bodies have a legal duty to have regard to conserving their biodiversity.

So what should planners be looking for when seeking to identify examples of this priority habitat? The 'brownfield' Priority habitat is unique among UKBAP habitats in that it represents a variety of habitats on an area defined by previous land-use, rather than a single habitat type. The habitat of brownfield sites is best defined in terms of vegetation structure, rather than through specific types of vegetation. Open Mosaic Habitats on Previously Developed Land may be characterised by

IDENTIFYING WILDLIFE-RICH BROWNFIELD SITES

unmanaged, flower-rich grasslands with sparsely-vegetated areas on nutrient-poor substrates. They may also contain features which contribute to the habitat variety, such as patches of bare ground, seasonally wet areas and patches of scrub. Brownfield land which matches this description, in whole or in part, should be considered a Priority habitat. An official habitat definition is currently being developed by DEFRA.

Sites which demonstrate these characteristics are likely to support high biodiversity, and further ecological surveys should be undertaken. Because the geology and land use history of brownfield sites will vary from region to region, and from site to site, the species present will also vary, so surveys will need to be targeted accordingly.



Left: The UKBAP Streaked bombardier beetle (*Brachinus sclopeta*)

Biodiversity Action Plan species

Many of the UK's most threatened invertebrate species have a strong association with brownfield habitats. A few species, such as the Streaked bombardier beetle (*Brachinus sclopeta*) and Distinguished jumping spider (*Sitticus distinguendus*) are only known from a few brownfield sites, and



Left: The UKBAP Distinguished jumping spider (*Sitticus distinguendus*)

their future depends upon protection through the planning process. Brownfield sites are also key habitats for scarce and declining butterflies such as the Dingy Skipper, Grizzled Skipper and Grayling. The Shrill Carder bumblebee (*Bombus sylvarum*) is restricted to a handful of populations, and brownfield sites are of key importance to its long-term survival. Lists of UKBAP invertebrate species associated with brownfield land can be found on the Buglife website at www.buglife.org.uk/aboutbuglife/publications

Brownfield land is also known to support a number of **protected species**, including Great crested newts, Slow worms, Common lizards and the Black redstart, a rare bird associated with brownfield sites in towns and cities.



Left: Brownfield sites can also support populations of protected species such as Common lizards

Identifying wildlife-rich brownfield sites

Gathering information for forward planning

When planning for brownfield biodiversity, prevention is certainly better than cure. Safeguarding existing important habitats and species when considering possible site allocations can help to reduce the need for costly mitigation and compensation at a later stage, and is a more effective approach to conserving biodiversity.

The challenge for planners is to ensure that they have adequate information on the biodiversity of brownfield sites when making site allocations. Even in advance of a full ecological survey, the biodiversity of a brownfield site can be provisionally assessed by identifying the key habitats and features for wildlife. Buglife has developed an easy-to-use

site assessment form, which provides a rapid way of recording features of importance to biodiversity and assessing the potential biodiversity (see Suggested further reading, below). This can be combined with Geographical Information Systems to provide an 'alert map' to inform site allocations, scoping opinions and planning applications. This information does not remove the need for adequate ecological information at the application stage, but can be a useful tool to highlight potential environmental impacts and survey requirements at an early stage and thus speed up the planning process.

Suggested further reading:

Buglife (2008) *Assessing Brownfield Biodiversity* (can be downloaded from www.buglife.org.uk/aboutbuglife/publications)

IDENTIFYING WILDLIFE-RICH BROWNFIELD SITES



Ecological surveys

8 Planning for brownfield biodiversity should be informed by good ecological information. Many species, including UKBAP Priority and protected species, occur on sites which are not part of the designated sites network. Therefore, site-specific information is necessary in order to adequately address the requirements of *Planning Policy Statement 9: Biodiversity and Geological Conservation* and demonstrate compliance with the NERC Act duty. Survey results should accompany the planning applications so that an informed planning decision can be made, and any recommendations should be secured through planning conditions.

The success of surveys on brownfield sites can often depend upon the experience of the surveyor in assessing such sites and the mapping detail at which surveys are undertaken. Phase 1 habitat surveys can be inconsistent in identifying biodiversity potential, since brownfield sites are often a complex mosaic of habitats. Surveyors should be familiar with brownfield ecology and undertake mapping at a level of detail that is able to identify any habitat mosaic present. If the scale at which habitats are mapped is too broad, habitat mosaics may be missed, giving the impression that the potential wildlife interest is lower than it is; this could also

Suggested further reading:

Further guidance for surveying for invertebrate on brownfield sites can be found in Buglife (2008), *Thames Gateway brownfields: invertebrate diversity and management* (can be downloaded from www.buglife.org.uk/aboutbuglife/publications)

English Nature (2005), *Organising surveys to determine site quality for invertebrates* (can be downloaded from www.naturalengland.org.uk/publications)

lead to a failure to identify the presence of the UKBAP 'Open Mosaic Habitats' Priority habitat.

An invertebrate survey is often the key survey for identifying the biodiversity value of brownfield sites, on account of the high number of rare invertebrate species (including a significant number of UKBAP priority species) associated with such sites. The invertebrate biodiversity is often dominated by groups such as butterflies, beetles, bees, wasps and spiders, and a majority of the rare (Red Data Book and UKBAP) species present on brownfield land are from these groups. The most effective site surveys should therefore pay particular attention to these groups. Reptile surveys are also often appropriate; the open conditions, areas suitable for hibernation and high invertebrate numbers can lead to large reptile populations. Great crested newts may also be found on brownfield sites.

What should a brownfield ecology survey include?

Surveys of brownfield sites provided with planning applications should indicate:

- The site's biodiversity interest, including the presence, or likely presence, of any UKBAP habitats or species
- Its local, regional and national significance in terms of biodiversity
- Any habitats and features of importance

Invertebrate surveys are likely to be important, and should target key groups such as bees/wasps, butterflies/moths, flies, beetles and spiders. Surveys will need to take place over a number of visits during the appropriate months of the year, while employing a variety of methods (such as sweep netting, pitfall trapping and hand searches).

BROWNFIELDS AND PLANNING POLICY

Brownfields and planning policy

The planning system is responsible for determining what, where and how development happens. All planning decisions are expected to be made in accordance with the development plan, and in line with national planning policy, except where there is an over-riding reason to depart from these. There are a number of planning policies relating to brownfield development, but underpinning these is the goal that planning authorities should seek to avoid harm to biodiversity in the first instance. If this is not possible, then that harm will need to be adequately mitigated or, as a last resort, compensated for. The ultimate aim should be to achieve a net gain in biodiversity.

This section gives an overview of the policy and legislation that affects brownfield land, encompassing both the drivers for development and safeguards for biodiversity. It evaluates the effectiveness of current policy and legislation designed to protect biodiversity, identifies any shortcomings and recommends how these can be addressed. Please note that brownfield is defined throughout this guide as not including gardens.

The potential challenge to sustainable development caused by brownfield land rich in biodiversity is not insurmountable. As has already been shown in this guide, where up-to-date environmental information is available to planners this can play a vital role in supporting genuinely sustainable planning decisions and preventing unnecessary costs and delays.

Natural Environment & Rural Communities Act (2006)

The introduction of the NERC Act was an important step forward for nature conservation. Section 40 states that “Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.” To ensure compliance with the NERC Act, planning authorities need to satisfy the requirements of PPS9, which includes having access to adequate and up-to-date biodiversity information about individual sites. This is particularly significant for brownfield land, where the presumption in favour of development can lead to sites being allocated with little or no survey having taken place.

Planning Policy Statement 1: Delivering Sustainable Development

PPS1 is a key driver of brownfield development. It prioritises the reuse of Previously Developed Land, with the objective of reducing urban sprawl. PPS1 also presents a potential conflict for those looking to prioritise the development of brownfield sites. It states that to deliver sustainable development planners should seek to ‘enhance as well as protect biodiversity.’ PPS1 also calls for higher densities of development, thereby ‘increasing output while reducing resource use’ (the resource in question being land). Yet building at high densities is likely to make protection of biodiversity more challenging to achieve, except where this allows important areas of existing habitat to remain undeveloped and retained as biodiversity-rich Green Infrastructure. The density of development that sites can sustainably support will vary from site to site, and site-based ecological information will be required to inform the decision making process.

Planning Policy Statement 3: Housing

Planning Policy Statement 3: Housing (PPS3) is the main driver for the development of Previously Developed Land (PDL), setting the national target of 60% of new housing to be provided on PDL. Government reports suggest that this target is being met, and exceeded in many places. Despite a recent Royal Commission report calling for the target to be reviewed, there are commitments to maintain it for the foreseeable future.

Within PPS3 there is one potential (but usually overlooked) safeguard for brownfield biodiversity. The definition of Previously Developed Land found in the policy excludes sites that have been “*previously developed but where the remains of any structure or activity have blended into the landscape in the process of time (to the extent that it can reasonably be considered as part of the natural surroundings)*”. This provides planners with an opportunity to evaluate whether development of a brownfield site is appropriate, or indeed if the site fits the official definition of PDL. Sites that have blended in should be treated as greenfield.

But how might the ‘blended into the landscape’ definition be applied in practice? It is not necessary for sites to have lost all trace of their former use to be considered to have ‘blended into the landscape’. This has been demonstrated in the law courts, though it is important that each site is assessed in its own context. It is the role of the planning authority

to determine “*the extent that it can reasonably be considered as part of the natural surroundings*”. This will often be a subjective judgement, and it should be borne in mind that brownfield wildlife can co-exist alongside the crumbling man-made structures – indeed such features can even support biodiversity – so large areas of cracked tarmac and concrete don’t automatically preclude a site from being considered as a natural asset. The presence of significant levels of biodiversity is a valid argument that a site has ‘blended into the landscape’, even if man-made structures are still visible – the wildlife will be the best indicator of site status. This gives a degree of flexibility to planners in how they choose to categorise and deal with Previously Developed Land.

Minerals extraction sites are also ‘brownfield’, although where provision for restoration has been made they are not considered as Previously Developed Land (as defined by PPS3), and are dealt

with under MPS1: Planning and Minerals. Minerals extraction sites often have significant biodiversity interest, and there are often opportunities to manage them for the benefit of wildlife and people if a pragmatic approach is taken to old planning conditions which may no longer be in line with current land use priorities.

Suggested further reading:

Guidance on restoring aggregates sites for biodiversity has been produced in ‘*Managing Aggregates Sites for Invertebrates: a best practice guide*’, which can be downloaded from www.buglife.org.uk/aboutbuglife/publications

Davies, A.M. (2006) *Nature After Minerals: how mineral site restoration can benefit people and wildlife*. RSPB, Sandy.



Above: Aggregates sites can provide wildlife oases in urban and farmed areas

Planning Policy Statement 9: Biodiversity and Geological Conservation

Planning Policy Statement 9 is the key national guidance on how biodiversity is to be protected through the planning system. This policy promotes a proactive role for planning authorities, recommending the conservation of biodiversity through site protection policies, basing decisions on up-to-date ecological information and evidence, and by influencing the design and form of new development. PPS9 states that if significant biodiversity impacts cannot be prevented, mitigated or compensated for, then planning permission should be refused. This applies to brownfield sites as much as to other potential development sites.

PPS9 recognises the potential policy conflicts surrounding the reuse of brownfield land, and makes clear that where sites have biodiversity importance this should be retained. Planning authorities should ensure that the most important brownfield sites for biodiversity are properly identified and protected through local authority planning policy or, where appropriate, statutory designation (such as happened with Canvey Wick in south Essex, a brownfield site designated as a Site of Special Scientific Interest in 2005).

PPS9 paragraph 13:

The re-use of previously developed land for new development makes a major contribution to sustainable development by reducing the amount of countryside and undeveloped land that needs to be used. However, where such sites have significant biodiversity or geological interest of recognised local importance, local planning authorities, together with developers, should aim to retain this interest or incorporate it into any development of the site.

Suggested further reading:

Oxford, M (2006) PAS 2010: *Planning to halt the loss of biodiversity*, British Standards Institute

The requirement for robust ecological information

As PPS9 makes clear, it is important that all planning decisions are based upon up-to-date information about the environmental characteristics of a site, including its biodiversity value. Planning *Policy Statement 12: Local Spatial Planning*

also requires an adequate evidence base for the production of Local Development Frameworks.

PPS9 paragraph 1 (i):

Development plan policies and planning decisions should be based upon up-to-date information about the environmental characteristics of their areas. These characteristics should include the relevant biodiversity and geological resources of the area. In reviewing environmental characteristics local authorities should assess the potential to sustain and enhance those resources.

The level and quality of ecological information available has a huge bearing on the decision making process at all levels of planning, and can be the difference between biodiversity losses and sustainable development. A major contributor to the loss of biodiversity in urban areas is lack of awareness of, and information about, the ecological importance of brownfields, which can result in an underestimation of the true impacts of development on biodiversity.

Often the first ecological information available to inform planning decisions comes as part of an Environmental Impact Assessment (EIA) submitted by the applicant. This will comprise the main information used to evaluate impacts and to inform the responses of consultees, and it is the responsibility of the planning authority to ensure that the information is appropriate and sufficient.

When an ecological assessment is inadequate – for example, where surveys have been undertaken outside of the optimum season, or where key species have been ignored – this has the potential to overlook significant impacts, thereby causing unnecessary delays to the planning process (including through objections from statutory and non-statutory consultees). Such delays can be avoided by identifying those brownfield sites likely to support high biodiversity at the forward planning stage, and ensuring that they are properly assessed.

Accompanying PPS9 is the document 'Planning for Biodiversity and Geological Conservation – A Guide to Good Practice' (ODPM, 2006). This emphasises the need for an information and evidence base to: support the preparation of Regional Spatial Strategies and Local Development Frameworks; achieve an informed strategic and spatially planned approach to the conservation, enhancement and restoration of biodiversity; and appraise the environmental impacts of all development

proposals. Within the Guide, a checklist of components of an environmental evidence base includes 'information on the biodiversity value of previously developed sites and the opportunities for incorporating this in developments'.

Validation of Applications

Since April 2008 local authorities have been able to make a 'biodiversity survey and report' a requirement for validation of planning applications (CLG, 2007). The type and extent of the application will determine the level of detail required, but this system still requires a level of biodiversity information that will allow an assessment of the likely accuracy of the information provided by the applicant. Guidance for applicants should encourage them to identify potential areas of the UKBAP habitat Open Mosaic Habitats on Previously Developed Land, and highlight any further surveys needed to identify UKBAP species associated with such habitats in their region. The Association of Local Government Ecologists have produced guidance and a template which can be downloaded at www.alge.org.uk

It is also worth considering the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 in this context. Regulation 19 states that an applicant may request a 'scoping opinion' from the planning authority. Planning authorities should aim to be in a position to give accurate scoping opinions for brownfield developments, based upon up-to-date environmental information, including biodiversity information. As discussed elsewhere in this guide, 'alert maps' based on preliminary brownfield site assessments are a good way of addressing this requirement.

Local authority ecologists and biodiversity officers have an important role to play in helping to ensure that adequate information is made available to those who need it. Ecologists can help to integrate sustainability into working practices and decisions, and ensure compliance with biodiversity policy and legislation. Where local authorities do not have access to a professional ecologist they will need to seek out the expertise of external bodies, such as statutory nature conservation organisations, biological record centres and conservation organisations such as the Wildlife Trust, RSPB and Buglife.



Above: West Thurrock Marshes in the Thames Gateway was subject to a judicial review of its planning permission in 2008 over concerns that its biodiversity value was not adequately safeguarded

Suggested further reading:

Lott, D (2006) *Biodiversity data needs for Local Authorities and National Park Authorities*, Association of Local Government Ecologists (can be downloaded from www.alge.org.uk)

Office of the Deputy Prime Minister (2006), *Planning for Biodiversity and Geological Conservation – A Guide to Good Practice*

Buglife website www.buglife.org.uk

Locating development where it avoids harm to wildlife

Under PPS9 planners should be satisfied that development is situated where it will do the least harm to biodiversity. Well-informed forward planning should identify the most appropriate development sites early on. Planning authorities need to be proactive in bringing together developers and land owners to achieve sustainable development through prioritising the development of sites that will have minimal impact on the environment, including sites of low biodiversity significance.

PPS9 key principle 6:

Where granting planning permission would result in significant harm to [biodiversity] interests, local planning authorities will need to be satisfied that the development cannot reasonably be located on any alternative sites that would result in less or no harm. In the absence of any such alternatives, local planning authorities should ensure that, before planning permission is granted, adequate mitigation measures are put in place.

Planning decisions should also be informed by an assessment of other potential development sites, and reasons as to why these are not realistic alternatives. Alternative sites should be considered in advance of impact-avoidance measures – prevention before mitigation. This is sound economic as well as environmental reasoning. The prioritisation of low biodiversity sites provides a benefit in that the costs of mitigation or compensation to developers will be lower, as well as reducing impacts on wildlife.

Right: A flower-rich wetland area on a brownfield site that supports several UKBAP species

Greenfield or Brownfield?

Current planning policy prioritises previously developed or brownfield land for development and gives greenfield land much stronger protection. Yet as much of 50% of brownfield land has been found to support high levels of biodiversity. The planning system has a duty to have regard to conserving existing biodiversity, wherever this occurs. A more evidence-based approach to the location of new development should be pursued, so that areas with the lowest environmental impact are prioritised for development, regardless of whether they are brownfield or greenfield.



Designing for biodiversity

PPS9 paragraph 14:

Development proposals provide many opportunities for building-in beneficial biodiversity or geological features as part of good design. When considering proposals, local planning authorities should maximise such opportunities in and around developments, using planning obligations where appropriate.

Where development cannot be avoided, carefully-designed mitigation is the principal tool for reducing the impacts. It is extremely important that up-to-date environmental information is available to inform and shape the design of new development. Ecological surveys help to identify the extent and distribution of habitats or features of importance for wildlife, and should inform any proposed mitigation and/or positive nature conservation measures.

Existing features of value to biodiversity should be retained within new development. Invariably a site will contain areas of habitat that contribute less to biodiversity than others, and these should be prioritised for development over areas of high biodiversity value. Where possible, areas that allow movement of species through a site should also be conserved, especially when that site may provide a link between other sites, parks, gardens or other habitats.

The phasing of mitigation is crucial to its success. Newly created habitats should be in place before destruction of the habitat that they are replacing, and adequate time must be given for these habitats to establish and to enable wildlife to move in. Mitigation that is unable to provide continuity of habitat for wildlife is unlikely to be successful. Phasing may require a number of years where the biodiversity and habitat complexity is especially high.

Opportunities to create new habitats and features of value to brownfield biodiversity should also be taken, both in landscaping and also in the design of new buildings. Brownfield species often have very specialised requirements, and successful mitigation needs to take account of this. Beneficial features include exposed earth banks, areas of sparsely vegetated stony ground, seasonally wet areas and patches of bare ground within unmanaged grassland. Areas of wildflower grassland which use

native nectar-rich species are also important for wildlife, with low fertility soil the key to successful establishment. These nutrient poor soils are significantly less expensive than the 'top soil' often used in post-development landscaping.

Living roofs for biodiversity

Green roofs and walls are one way to incorporate habitats for biodiversity within new development, and planning authorities should be actively promoting these in pre-application discussions with developers. 'Living roofs' are distinctive from sedum-based systems, as they are specially designed for wildlife, recreating the flower-rich rubble substrates typical of brownfield sites. A new project led by Buglife and LivingRoofs is creating roofs that will help to provide new habitats for brownfield biodiversity in London.



Above: Imaginative landscaping can provide colourful habitats for people and wildlife



Above: Well designed living roofs can mitigate some of the impacts of development on biodiversity

The challenge of mitigating the adverse effects of brownfield development is that some of these features may not be as aesthetically pleasing as more traditional (but less effective) mitigation measures. However this can be addressed through innovative design – such as using brightly-coloured substrates – and providing information and interpretation to residents about the value of such features for wildlife. A sense of ownership can also be gained through involvement in the management process. Making small concessions in management, such as mowing the edges of long grass areas and providing access through such areas, can also illustrate that the features are ‘cared for’.

Managing brownfields for wildlife

Securing the long-term management of wildlife areas is an important consideration. A management

plan will usually be necessary on sites of significant wildlife value. The wildlife habitats of brownfield sites often require a different type of management to typical urban greenspace. Brownfield habitats may have been created and maintained by man-made processes such as disturbance from robust public use. If these processes are constrained as a result of site development, they will need to be replicated to ensure the long term success of the mitigation. Management plans should be drawn up in consultation with experienced ecologists, Natural England and other nature conservation organisations where appropriate. The success of mitigation measures should be monitored through periodic surveys, and adapted if they are found to be ineffective. Monitoring and management, and the associated management plan, should be secured through appropriately worded planning conditions and Section 106 agreements.



Above: This sparsely vegetated stony area successfully recreates one of the habitat types present on brownfield sites, and will support a number of scarce invertebrates including UKBAP species



Above: Features such as this bank of Pulverised Fuel Ash provide important nesting areas for invertebrates and should be retained in development plans

Suggested further reading:

Town & Country Planning Association (2004), *Biodiversity by Design* (can be downloaded from <http://www.tcpa.org.uk/biodiversitybydesign.htm>)

General brownfield management guidelines are given in Buglife (2008), *Thames Gateway brownfields: invertebrate diversity and management* (can be downloaded from www.buglife.org.uk/aboutbuglife/publications)

National Brownfield Strategy

The National Brownfield Strategy (NBS) is the Government's policy framework for brownfield development. The NBS sets out the policy measures necessary to ensure sustainable reuse of brownfield land. The strategy aims to "encourage and promote best practice in the reuse of PDL which recognises the biodiversity value, or nature conservation importance, of some brownfield sites and is consistent with the principles of sustainable development." It recognises that development will not always be the most appropriate option for

sustainable reuse of brownfields, acknowledging the need to protect the UKBAP habitat Open Mosaic Habitats on Previously Developed Land. The NBS also states that 'Developers need to do more to assess the environmental implications of their proposals for brownfield sites at an early stage, in consultation with appropriate agencies' (CLG, 2008).

The Brownfield Guide, Recommendations to Government and associated documents can be downloaded from <http://www.englishpartnerships.co.uk/landsupplypublications.htm>

CONCLUSION

Conclusion

Making decisions that seek to integrate economic development, improve quality of life and conserve environmental assets are demanding responsibilities for planning authorities. This is particularly challenging when assessing the role of brownfield land in delivering regeneration. Where brownfield land supports significant levels of biodiversity, policies driving brownfield development can create real challenges to achieving environmentally sustainable development. Where sufficient ecological information is in place it can make achieving a sustainable outcome considerably easier.

Planning authorities need to be proactive in delivering biodiversity conservation through the planning process, not just through development control decisions but also by gathering the biodiversity information necessary to inform forward planning. It is only through adequate forward planning for biodiversity that negative impacts can be foreseen and avoided. This information-based decision-making can also contribute to the development of functional Green Infrastructure that helps to mitigate against the impacts of climate change for wildlife, as well as supporting the ecosystem services that underpin our economic and social wellbeing.

Effective forward planning for biodiversity is only part of the solution. The increasing level of development on brownfield land predicted will make environmental impacts unavoidable. Yet where planning authorities influence the design of new development, this can help to ensure that it continues to provide valuable habitats for wildlife. Mitigation that is informed by appropriate survey, maintains habitat continuity and is extensive enough to maintain or enhance biodiversity in the long-term will also be essential. High standards of survey, design and long-term sustainable management, supported by the relevant professional bodies, will be needed if biodiversity and new development are to co-exist successfully.

Far from being a constraint, the wildlife of brownfield sites provides a real opportunity to put biodiversity at the heart of new development. Increasingly it is recognised that when developments make space for wildlife they are healthier and more attractive places to live. The policies and tools to make this happen already exist, and initiatives such as Eco-towns provide an opportunity to mainstream this. All we need now is a more coordinated and informed approach to protecting biodiversity in the reuse of brownfield land.



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It should be noted that the views expressed in this guide are not necessarily those of the organisations above.



Above: Brownfield sites are capable of supporting high biodiversity and human recreation – in this case mountain-biking



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