Wychavon District Council Local Development Framework - Planning and Wildlife Supplementary Planning Document

July 2008

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1 Introduction

The government's Planning Policy Statement 9: Biodiversity and Geological Conservation (2005) has set new guidelines to ensure that the potential impacts of planning decisions on biodiversity are fully considered by regional and local planning bodies. Under these recommendations local authorities should take an integrated approach to planning for biodiversity and geodiversity when developing planning policy and ensure that local policies are consistent with the national, regional and local biodiversity priorities and objectives. Planning decisions should be based on up-to date information about the environmental characteristics of the area and should aim to maintain, and enhance, restore or add to biodiversity and geological interests. In 2006 the Government put further emphasis on biodiversity with the introduction of the Natural Environment and Rural Communities (NERC) Act, which creates a new statutory duty for all public authorities to conserve biodiversity.

1.1 Supplementary Planning Documents

1.1.1 Supplementary Planning Documents are local planning policy documents designed to provide further explanation or amplification of specific policies in the Development Plan. They are a type of Local Development Document and form part of a Local Authority's Local Development Framework - the portfolios of planning documents that are gradually replacing Local Plans.

1.1.2 Supplementary Planning Documents cannot introduce new policies to the Development Plan or significantly alter any policies within it but they can be useful in emphasising certain policies and in providing further information to developers and interested parties on their implementation.

1.2 Planning and Wildlife Supplementary Planning Document

1.2.1 The main **objectives** of this document are:

1. To conserve, restore and enhance biological diversity within the district of Wychavon.
2. To provide guidance for developers, planners and members of the public on how to take account of and incorporate biodiversity issues into developments.
3. To protect and improve wildlife corridors and stepping stones.
4. To safeguard protected and priority species and habitats.
5. To promote the benefits of biodiversity.

1.2.2 Issues relating to biodiversity can often be seen as an obstacle to development. If adequately considered from the earliest stages, development and nature conservation do not need to be in conflict with each other but can be planned in such a way that they can be of mutual benefit.

1.2.3 The Royal Town Planning Institute has adopted a five-point approach as best practice when making planning decisions for biodiversity, as shown below. Applicants who are considering developing a site are advised to also use these points when putting together an application.

I. **Information** – Is more information about the site's biological resource needed? Is more information about the development and its potential effects needed? Is the significance of the effects clear? Is relevant internal or external expertise required?

II. **Avoidance** – have all the adverse effects on wildlife species and habitats been avoided wherever possible?

III. **Mitigation** – where adverse effects are unavoidable, have they been or can they be minimised by the use of mitigation measures that can be guaranteed by, for example, conditions or planning obligations?

IV. **Compensation** – where, despite mitigation, there will be residual adverse effects that cannot be reduced further, have they been or can they be compensated for by measures aimed at offsetting harm? Can the compensatory measures be guaranteed by conditions or planning obligations?

V. **New Benefits** – are there opportunities to provide new benefits for wildlife, for example by habitat creation or enhancement? Can these new benefits be guaranteed by planning obligations?

1.2.4 The Government's Planning Policy Statement 9 requires, as a key principle, that local authorities 'ensure that plan policies and planning decisions aim to maintain, and enhance, restore or add to biodiversity and geological conservation interests'. In effect this means that a planning proposal needs to demonstrate that it delivers no 'net loss' and seeks a 'net gain' of biodiversity wherever possible.

1.3 Sustainability Appraisal

1.3.1 It is government policy to promote and support progress towards sustainable development. The aim of sustainable development is to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life for future generations. Achieving development that is sustainable is an integral part of the new planning system.

1.3.2 Sustainability Appraisal is a method used for integrating social, environmental and economic issues into plans. A Sustainability Appraisal has been conducted on the Planning and Wildlife Supplementary Planning Document and a Sustainability Appraisal Report is appended to this document.

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2.1 Policy Background

2.1.1 The importance of biodiversity is widely recognised in national, regional and local planning policy. Indeed, species are often protected by international and national law and habitats by international, national, regional and local designations. However, it is also important to recognise wider biodiversity that is not protected by statute or designation. It is the recognition and protection of this wider biodiversity in particular that the Planning and Wildlife Supplementary Planning Document seeks to address.

2.1.2 Local Plan Policy ENV 7 emphasises that development proposals will be required to retain important ecological features, including natural habitat and features of nature conservation value in situ. Proposals which would have an adverse impact on the integrity of other habitats, species and features will only be permitted where:

- The reasons for the proposal outweigh the impact on the intrinsic nature conservation value of the habitat, species or feature.
- The Council is satisfied that there are no reasonable alternative sites or solutions to accommodate the development proposed; and
- Compensatory habitat provision or management is provided in appropriate circumstances. Developers will be required to prepare an ecological assessment on all proposals likely to affect important ecological sites.

2.1.3 Developers would be required to prepare a professional assessment in all proposals that are likely to affect sites of ecological importance.

2.1.4 It should be noted that Local Plan policies ENV 2 (Cotswolds Area of Outstanding Natural Beauty (AONB)), ENV 5 (Sites of Regional or Local Wildlife Interest), ENV 6 (Protected Species) and ENV 8 (Protection of Hedgerows, Trees and Woodland) also assist in the protection of wider biodiversity.

2.2 Relevant Legislation

2.2.1 Wychavon District Council has a number of statutory responsibilities and discretionary powers, which can be used to further nature conservation. The basis of these responsibilities and powers are contained in the Town and Country Planning Act (1990), The National Parks and Access to the Countryside Act (1949) and the Wildlife and Countryside Act (1981). The Planning Policy Statement 9 covers the relationship between nature conservation and the planning process. This guidance looks for local authorities to take full account of nature conservation factors, both in formulating structure and local plans and in consideration of individual planning applications. The Countryside and Rights of Way (CRoW) Act 2000 introduced a new duty for local authorities (amongst others) to take reasonable steps to further the conservation and enhancement of features of SSSIs.

2.2.2 The Natural Environment and Rural Communities (NERC) Act 2006 has reinforced Local Authorities` responsibilities in respect of biodiversity. Section 40 creates a new statutory duty for all Local Authorities to conserve biodiversity. It states that conserving biodiversity includes restoring or

enhancing a population or habitat. Section 41 requires an up-to-date 'List of habitats and species of principal importance for the conservation of biological diversity in England' to be published. This list, due to be published in 2008, is intended to guide future conservation action.

2.2.3 Further to the legislative controls on planning, many species have 'protected' status and it is therefore illegal to carry out any action that may cause unnecessary harm or stress. Under the Habitats Regulations 1994, where European protected species may be affected, all local planning authorities should have "due regard" to the following tests:

- that the application satisfies "the purpose of preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment" (Regulation 44(2)(e))

- if minded to grant planning consent, that "there is no satisfactory alternative" (Regulation 44(3)(a))

- and that "the action authorised will not be detrimental to the maintenance of the species concerned at a favourable conservation status in their natural range" (Regulation 44(3)(b))

2.2.4 The Conservation (Natural Habitats, etc.) Regulations 1994 have recently been amended by the Conservation (Natural Habitats, etc.) (Amendment) Regulations 2007 to strengthen the protection of European Protected Species. Amongst others, this means that there is no longer a defence for damaging or destroying a breeding site or resting place of a European Protected Species. Please contact Natural England for further advice on relevant cases.

2.2.5 Recent changes to the law mean that local councils cannot act on planning applications without being in possession of the relevant up-to-date wildlife information. Therefore in order for planning permission to be granted to a development it will often be necessary to carry out a wildlife survey to determine which species are present, how the impacts on them can be avoided, mitigated against or compensated for and what measures could be taken to enhance a population or habitat.

2.2.6 A brief overview of some of the protected species relevant to Wychavon District and their legal status is listed below:

2.2.7 Great Crested Newts – both the species and their habitat are fully protected by UK law (Schedule 5 of the Wildlife and Countryside Act 1981, Annex 4 of the Habitats and Species Directive). As great crested newts spend large parts of their life cycle on land, their habitats include not only ponds for breeding but also the terrestrial habitat where they feed, shelter, hibernate and migrate between ponds. Any works affecting this habitat require a license from Natural England and must be appropriately timed to tie in with the newts' annual breeding and hibernation cycle. Worcestershire is a national stronghold for this species and hosts a large proportion of the UK and European population.

2.2.8 Bats – All bat species and their roosts are protected by law, both national (Schedule 2 of the Conservation Regulations 1994 and the Wildlife and Countryside Act 1981, schedule 5) and international (The Bern Convention 1979, The EC Habitats Directive 1992, and The Bonn Convention 1980 including

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the Agreement of the Conservation of Bats in Europe, 1994). It is therefore illegal to deliberately kill or injure a bat; disturb or damage a bat roost; or obstruct an entrance to a roost. Works likely to affect bat roosts may require a license from Natural England.

2.2.9 **Otters** - after serious declines in the 1970's otters are now slowly making a comeback. Thanks in part to the legislative controls they are now found on several watercourses in Worcestershire. Otters have full protection under The Wildlife and Countryside Act (1981), the subsequent Countryside and Rights of Way Act in 2000 and the Conservation (Natural Habitats, etc.) Regulations 1994. A license from Natural England is needed for any development that may impact upon Otter populations. All of Wychavon's rivers and tributaries now support the species.

Slow worms and Grass snakes

– these species are protected under the Wildlife and Countryside Act 1981 and the CRoW Act 2000.It is illegal to intentionally kill or injure them, or to take them from the wild or offer them for sale. Their habitats do not have the same protection but will be one of the considerations when assessing a planning proposal.

2.2.10 **Badgers** – badgers are protected under the terms of the Protection of Badgers Act 1992. This makes it illegal to kill, injure or disturb badgers, or damage and disturb their setts even if they have not been in use for some time. All work that may potentially have an impact on badger setts must be licensed by Natural England.

2.2.11 **Birds** – With a few exceptions all birds and their occupied nests are protected by law. It is an offence to kill or injure an individual or to take, damage or destroy the nest of any wild bird during the breeding season (either through wilful destruction or through reckless neglect by not checking for nests).

2.2.12 It must be noted that any breach of the above laws is likely to result in a significant fine or a custodial sentence.

2.2.13 For further information on surveys please see section 3, "Brief Guidance on Surveys".

2.3 Worcestershire Biodiversity Action Plan

2.3.1 Following the 1992 Convention on Biological Diversity, signed by 153 nations including the UK, national, regional and local Biodiversity Action Plans (BAP's) have been compiled and put into practice. In 1999 the Worcestershire Biodiversity Action Plan was completed detailing the important habitats and species found within the county and what needed to be done to slow down and reverse the decline of many of these. An updated version of the Worcestershire BAP is currently being drawn up (see the Worcestershire Biodiversity Partnership`s website at worcestershire.whub.org.uk/home/wcc-bio-index.htm for further information on the current species and habitat action plans and the BAP review).

2.3.2 The Worcestershire Biodiversity Partnership, an alliance of organisations with the common aim of achieving the targets set out in the Worcestershire Biodiversity Action Plan, was subsequently established. The partnership includes many organisations ranging from the non-governmental conservation charities such as The Worcestershire Wildlife Trust, the Worcestershire Biological Records

Centre, The Farming and Wildlife Advisory Group and the Herefordshire and Worcestershire Earth Heritage Trust, to the County Council and local authorities such as Wychavon District Council and farming, land-owning and business interest groups. This partnership has continued to work towards the objectives set out for habitats and species, chosen because of their threatened status or because important national strongholds occur in Worcestershire, or both.

2.4 Species Relevant to Wychavon District

2.4.1 Many of the important nationally and regionally rare species that have been highlighted within the Worcestershire Biodiversity Action Plan can be found here in Wychavon. The important BAP species found within the district are shown below:

- **Otter**- also a priority UK BAP species.
- **Bats** - Records of priority UK BAP species Barbastelle, Bechstein's, Noctule, Soprano Pipistrelle, Brown long-eared and Lesser horseshoe as well as other bat species have been found in Worcestershire.
- **Water Vole** - The water vole is a priority UK BAP species which is fast declining in numbers. It is now almost only found in the streams and on the canal around Bromsgrove and is therefore most likely to be encountered in the north-western part of Wychavon District.
- **Nightingale** - The nightingale is an Amber List species within the UK Red Data Book of Birds. It has undergone a severe decline in numbers nationally to the extent that breeding in Worcestershire can no longer be confirmed. Several of the sites that have held singing males on an annual basis over the last few years are within Wychavon District.
- **Slow Worm** - also a priority UK BAP species, often found on allotments and land which is under development pressure.
- **Great Crested-Newt** - also a priority UK BAP species.
- **Brown Hairstreak Butterfly** - This butterfly is a flagship for Wychavon´s biodiversity. It was once fairly widespread in England and Wales but has seriously declined nationally due to the loss of woodlands and hedgerows and the widespread practice of annual flailing of hedgerows. Worcestershire is the only county in the West Midlands with a known population of the butterfly, found throughout the former Forest of Feckenham.
- **Club-Tailed Dragonfly** - Regarded as Nationally Scarce in Britain. Worcestershire has about 19% of the national reserve, making it possibly the most important county in the UK for the species. Both the River Avon and the River Severn hold good populations.
- **Violet Click Beetl**e - This beetle is classed as Endangered in the UK Red Data Book and a priority UK BAP species. Bredon Hill was designated a Special Area of Conservation in 2005 because of the presence of the beetle. It is known from only two other sites in the UK.

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- **Black Poplar** - Once a characteristic feature of lowland river valleys, it is now one of our rarest trees. It would have been found along the river Severn and its tributaries but has now almost disappeared from its former range.

- **Noble Chafer** - Classified as Vulnerable in the Red Data Book of Insects and a priority UK BAP species. Worcestershire is a particular stronghold for the species in this part of the country and has been found in traditional orchard trees around Wychavon.

- **Farmland Birds** - Breeding bird populations are declining steadily and all the farmland birds included in the revised Worcestershire BAP (except for barn owls) are now priority UK BAP species. The Worcestershire BAP species are skylark, linnet, tree sparrow, corn bunting, lapwing, grey partridge, yellowhammer, reed bunting and barn owl.

2.4.2 As well as the species above which are included within the Biodiversity Action Plan for Worcestershire, the county's wildlife in general is facing continued and accelerating habitat degradation and species loss. The County's Red Data Book noted that many species have shown dramatic levels of decline within the Wychavon area over the last few decades. These include hedgehogs, stoats, weasels, harvest mouse, palmate newt, bullfinch, spotted flycatcher, and a number of invertebrates such as pond snails. These declines are of great concern and positive action needs to be taken to secure the long-term survival of these species within the Wychavon area.

2.4.3 However, by definition, biodiversity is not just about the rare and endangered species, it is about all the species that exist around us, all of whom are essential to a healthy fully-functioning natural environment. An awareness of the needs of all wildlife is therefore necessary when attempting to plan effectively for biodiversity. Background data and contextual information on the local area can be obtained from the Worcestershire Biological Records Centre.

2.5 Habitats Relevant to Wychavon District

2.5.1 Alongside important species, the Worcestershire Biodiversity action plan also highlights important habitats that need conserving. Many of these are found within the Wychavon District, including areas that are not contained within particularly designated areas.

A sample list of the Biodiversity Action Plan habitats within Wychavon is shown below:

Table 1

Habitat	Examples in Wychavon
Arable	Kemerton Estate, Bredon Hill, Lime rich soils around Pebworth and fields at Naunton Beauchamp.
Orchards	Old plum orchards between Wood Norton and Birlingham. Cleeve Prior Community Orchard

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Habitat	Examples in Wychavon
Hedgerows	• Blackthorn hedgerows around Grafton, Roundhill and Trench Woods important for Brown Hairstreak butterflies. • Old field hedges in the central region of Worcestershire lying within the triangle of Worcester, Droitwich and Inkberrow.
Scrub	• Scrub mosaic on Bredon Hill. • Ashton Scarp & Conderton Hill Old Quarries SWSs • Blackthorn scrub at Grafton, Roundhill and Rabbit Woods important for Brown Hairstreak butterflies.
Woodland	Trench, Grafton & Tiddesley Woods (SSSI's)
Lowland Wood Pasture and Veteran Trees	• Pipershill Common SWS • Spetchley Deer Park SWS • The Park and Pendril's Grove SWS • Bredon Hill NNR/SAC/SSSI, in particular Elmley Deer Park (home of the Violet Click Beetle)
Wet Woodland	Harvington Carr and Highstank Pool SWSs
Reedbeds	Droitwich Canal and Oakley Pool SWSs Gwen Finch Nature Reserve
Fen and Marsh	Stakumford Marsh SWS
Lowland Wet Grassland	• Lower Avon Valley SWS • Fields on the north bank of the Avon opposite Eckington Bridge picnic site (part of the River Avon SWS)
Neutral Grassland	• Salt Meadow, Eades Meadow and Foster's Green Meadow SSSI's • Earls Common SWS.
Calcareous Grassland	• Windmill Hill SSSI • Westward Meadow SWS • On the Cotswold Escarpment around Broadway
Acid Grassland	Hartlebury Common LNR & SWS
Lowland Heathland	Hartlebury Common LNR & SWS
Road Verges	• Craycombe and Haselor Road Verge SWSs • Bickmarsh, Buckle Street Road Verge SWS
Urban (Villages and Towns)	River Salwarpe and Droitwich wildlife corridor through the town.
Canals	Worcester/Birmingham Canal

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Habitat	Examples in Wychavon
Ponds and Lakes	• Westwood Great Pool and Upton Warren SSSI's • Pirton Pool & Crowle Village Pond SWSs
Rivers and Streams	• Severn, Avon and Salwarpe Rivers, Piddle and Whitsun Brooks SWSs • Bow, Shell, Swans and Seeley Brooks SWS.

2.5.2 Wychavon District features numerous locally important sites that are considered to be of substantive nature conservation value. These include Local Nature Reserves and a number of non-statutory sites known as Special Wildlife Sites identified by the Special Wildlife Site Partnership led by the Worcestershire Wildlife Trust. These sites include a range of semi-natural habitats incorporating species and habitats that are regionally/ locally significant, scarce or rare. They are important in their own right and for their contribution in providing links to statutorily protected sites.

2.5.3 There are also many Sites of Special Scientific Interest (SSSI), nationally designated by Natural England, within Wychavon. Bredon Hill, designated as a 'Special Area of Conservation', is of significant international importance and therefore requires the greatest degree of protection. (see Wychavon District Local Plan, 2006, for a list of sites and the relevant policies.)

2.5.4 A number of sites listed in Table 1 are within Historic Parks and Gardens. Many Historic Parks and Gardens have considerable nature conservation value, often supporting a wide variety of habitats, such as unimproved grasslands, lowland wood pasture, veteran trees, ponds etc. They act as vital wildlife corridors or "stepping stones", essential for the migration, dispersal and genetic exchange of species. Further information can be found in the "Wychavon District Historic Parks and Gardens Supplementary Planning Document".

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3 What To Look Out For

3.1 Indicators for Potentially Valuable Habitats and Species

3.1.1 A number of the important wildlife sites within Wychavon have already received designations, internationally, nationally or locally, in the form of Special Areas of Conservation (SAC), Sites of Special Scientific Interest (SSSI) or Special Wildlife Sites (SWS) (currently under review). Development within these sites will be subject to the most stringent planning controls. However, this does not mean that development outside of these areas is unlikely to impact upon biodiversity, and sites adjacent to and in between existing designated sites can be vital to the long-term future of many of our important species and habitats.

3.1.2 Its size, quality and location within the wider landscape largely determine the value of any particular habitat. The extent to which the habitat aids connectivity within the landscape is also vitally important. The larger the site the more species it is likely to contain, and therefore its conservation value is likely to be more significant. However, the importance of the habitat for biodiversity may not be determined by the habitat area simply within the proposed development site, as the habitat may form an important part of the wider ecosystem that exists beyond the property. Sites that exist within close proximity to other large areas of important or protected habitat are more likely to contain important species than sites that are more isolated.

3.1.3 Many species rely on man-made structures as well as natural habitats during their life cycles. Bats, for example use structures such as barns for roosting and foraging, whilst piles of logs or rubble can provide an important shelter for great-crested newts. Brownfield sites can be an important haven for rare and declining invertebrates that have been lost from the wider countryside. Low nutrient (often newly exposed) or contaminated soils with sparse vegetation often associated with industrial activity such as quarrying and new road development, is very important for rare invertebrates incl. butterflies and moths.

3.1.4 The occurrence of important and rare species is often an excellent indicator of a valuable habitat. Many species have highly specific habitat requirements and are therefore absent from any areas that are in sub-optimal condition. In order to determine just how valuable a site is for biodiversity it is likely that a professional ecological survey will need to be carried out to determine exactly what habitat, and which species (including protected species) are found at the site.

3.1.1 Indicators for the Potential Presence of some Protected and BAP Species

3.1.1.1 **Great Crested Newts** – although widely associated with ponds, great-crested newts spend the majority of the year (October-March) in terrestrial habitats.

Look out for:

- Areas of grassland, scrub, bare soil, hedgerow and rubble adjacent to or within 250m radius of an existing pond.
- Ponds without fish. Fish and newts tend not to co-exist within larger ponds.
- Medium sized ponds with good marginal vegetation and some open water, which are surrounded by short rough grassland and contain refuges such as logs or rubble close by.

- Other ponds within the area.
- For more information about how to identify great-crested newts and where they are located please visit: http://www.froglife.org

3.1.1.2 **Bats** – All bats require a combination of suitable winter and summer roosts along with sufficient feeding and commuting habitat nearby.

Look out for:

- Trees with holes, cracks, cavities and heavy ivy cover.
- Old and Veteran trees.
- Brick and stone farmhouses and barns with exposed beams.
- Buildings with weather boarding and/or hanging tiles near woodland and/or water.
- Small voids in modern houses, large lofts in old barns, gable ends on pre-1914 buildings.
- Tunnels, cellars, underground structures and bridge structures.
- Hedgerows, woodland edges, open grassland and waterways. These are important features for the feeding and movement of bats. Bats can even rely on man-made structures as navigational aids.
- Roosts may only be used for part of the year but are all vitally important for the survival of the species. Bats will often return to the same roost each year, so just because they are not there now doesn't mean they won't return!
- Occurrence of small droppings and moth wings below roof spaces, beams and/or openings.
- If you would like further information on bats and where they are likely to be found please visit the Bat Conservation Trust website at: http://www.bats.org.uk

3.1.1.3 **Otters** - Otters have made a considerable comeback after their serious declines in the 1970's and now may be seen occasionally on the River Avon.

- Otters are known to travel on most of the watercourses within Wychavon District. It is therefore advisable to assume that virtually all watercourses, even small brooks and feeders, may be used by the animal, whether as a corridor or a feeding or resting place.
- Otters are notoriously difficult to spot and favour sites that offer shelter and camouflage on the banks of rivers, for example where woodland or scrub species exist up to the water's edge.
- They also use off-stream features such as dry scrub and reedbeds as resting places, even if they are not directly connected to the watercourse. In the right circumstances otters can move significant distances overland.
- It may be possible to see field signs such as spraint or a footprint.

3.1.1.4 **Water Voles** - The water vole is found mainly along the banks of slow moving water courses, such as ditches, streams and rivers with a variety of grass and herb species.

Look out for:

- Places with ample waterside plant growth and native emergent vegetation with little or no shade from trees and shrubs.

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- Steep earth banks for making their burrows, which appear as holes in the bank within 3m of water.
- Latrines which show a trampled mass of hardened old droppings with fresh ones on top.
- Tracks in mud flats close to the water. (The forefoot has four toes leaving a star shaped pattern. The hind foot has five toes, with the first and fifth toes leaving prints almost at right angles to the central toes.)

3.1.1.5 **Slow Worms** – Slow worms often occupy land suitable for development and are therefore under constant threat of losing their habitat.

Look out for:

- Allotments, railway embankments, derelict land with piles of rubble and rough grassland.
- Uneven ground with holes and burrows, logs and stones, soft ground, leaf litter or mosses or other dense ground vegetation like rough grassland in which to burrow, with some open ground exposed to warm sunshine.
- They primarily feed on snails, slugs and worms and so need access to areas where these are abundant.
- Slow worms, like all UK reptiles are inactive in winter and will not be spotted in the open during their hibernation. Ideal hibernation sites include piles of logs or rubble that allow the slow worm to burrow deep within.

3.1.1.6 **Badgers** – Badgers are nocturnal and so evidence of their activities is often easier to find than actually spotting the badgers themselves. The most obvious signs that they leave behind are their setts and latrines.

- Openings to badger setts can normally be distinguished from fox or rabbit holes by the deposit of spoil at the entrance, and tend to be at least 25cm wide, broader than they are high, with a rounded or flattened oval shape.
- Latrines are small excavated pits in which droppings are deposited.
- Badgers also require access to the wider countryside for food foraging and they tend to use the same paths over a long time to cover a substantial area of land. These paths can therefore become quite conspicuous.
- They will re-use paths even when an obstacle is placed in the way.

3.1.1.7 **Birds** – Over 400 species of birds exist within the UK and the habitats that they favour will vary enormously.

- Most birds tend to favour hedgerows and shrubs for nesting as opposed to trees, so the existence of these features is likely to add to the number of birds nesting at any site.
- Many birds, such as swallows, swifts, house sparrows and barn owls rely on buildings for their nesting sites.
- Ground nesting birds, found within rough grasslands and wetlands are especially vulnerable to disturbance.

- The majority of birds are highly visible and audible and their presence is usually relatively obvious at the right time of year. At certain times of the year they will, however, be less noticeable and it is therefore advisable to observe an area over more than one season.
- Birds are often a useful indicator of a rich diversity of other species within a site.

3.1.1.8 **Brown Hairstreak -** UK BAP and local BAP species. The only natural sites for this species in the West Midlands are within the Wychavon District in the woodlands and hedgerows from the M5 to the Warwickshire border with strongholds around Grafton Wood and Roundhill Wood. The species uses suckering blackthorn both within woodlands and hedgerows. The eggs remain on the blackthorn throughout the winter and are therefore vulnerable to annual winter flailing.

Look out for:

- Blackthorn hedgerows, blackthorn scrub or blackthorn in woodland rides.
- Eggs on blackthorn between September and April (generally in south-facing hedgerows, best time to search is November to February when the leaves are absent.)
- Mature ash trees in hedgerows, field corners or woodland.
- Adults gathering around ash trees in August / September.

3.1.1.9 **Grizzled Skipper -** UK BAP and local BAP species. This species thrives on sites with low nutrients or contaminated soils with patches of bare ground, the food plants Barren Strawberry, Wild Strawberry or Creeping Cinquefoil, and other nectar sources. In Wychavon it is mainly known to occur on the Honeybourne disused railway line but has also been found at Throckmorton and Hipton Hill. This is a species that is typical of brownfield habitat and may be on other sites in the country which Butterfly Conservation is not yet aware of.

Look out for:

- Bare ground with Creeping Cinquefoil, Barren Strawberry and Wild Strawberry, particularly in warm sheltered spots such as cuttings and embankments.
- Eggs on food plants in May to June.
- Adults flying in late April to early June.

3.2 Brief Guidance On Surveys

3.2.1 Where a development proposal is suspected to affect features of biodiversity conservation interest, such as protected or locally important species and/or habitats (such as those highlighted by the Worcestershire BAP), the application must be accompanied by a survey and assessment. Please see the 'Local Requirements for Protected Species checklist' linked to the 1APP Planning Application Requirements for criteria and indicative thresholds for protected species surveys. (www.wychavon.whub.org.uk/home/wdc-planning-criteria-protected-species-pdf.pdf) As stated in PPS 9 "planning decisions should be based upon up-to-date information about the environmental characteristics of their area." **Without such information it may not be possible to assess the application and its potential impact on biodiversity and it can be refused due to a lack of information.**

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3.2.2 Ecological surveys should be carried out by competent people with suitable qualifications and experience and to appropriately recognised standards.

3.2.3 All surveys should:

1. Be no more than 12 months old to ensure they are up-to-date.
2. Include information about the personnel involved in the survey.
3. Be accompanied and informed by background data, such as fauna and flora records, records of sites of local, national and international importance etc. to set the site in its ecological context. Much of this information will be available from the Worcestershire Biological Records Centre.
4. Be carried out at the appropriate time of year, at the appropriate times of day or night and in suitable weather conditions. This may necessitate undertaking a survey several months before a planning application is submitted. (Please see Table 2 for optimum survey times for some protected and BAP species.)
5. Be of sufficient detail (including the date, time, weather conditions, methods and equipment used).
6. Record and map the numbers, nature and location of habitats and species (fauna and flora) found on and adjacent to the site, species distribution and use of the area / site/ structure (e.g. for feeding, shelter and/or breeding).
7. State protection status of species and habitats found.
8. Describe other relevant characteristics, such as soil types, topography, exposure and connections into the surrounding landscape as appropriate.
9. Identify areas that need further investigation (e.g. more detailed survey on a particular species such as bats or slow worms).
10. Include a clear assessment of the potential effects a proposal is likely to have on the biological conservation interest in the short, medium and long-term (to include direct and indirect effects, during construction and afterwards), e.g. whether and where there will be a "net loss" or "net gain".
11. Demonstrate how adverse effects will be avoided wherever possible, how unavoidable impacts will be mitigated and reduced and how impacts that cannot be avoided or mitigated will be compensated.
12. Demonstrate how alternative designs or locations have been considered.
13. Identify where and how the proposals are likely to enhance, restore or add to existing biodiversity.

Table 2 Guidance on survey times

Species		J	F	M	A	M	J	J	A	S	O	N	D
Birds	Breeding			✓	✓	✓	✓	(✓)					
	Wintering	✓	✓	(✓)							(✓)	(✓)	✓
Reptiles					✓	✓	✓	(✓)	(✓)	✓	(✓)		
Great crested newts				✓	✓	✓	✓	(✓)	(✓)	(✓)			

Species		J	F	M	A	M	J	J	A	S	O	N	D
Badgers		(✓)	✓	✓	✓	(✓)	(✓)	(✓)	(✓)	✓	✓	✓	
Water voles			(✓)	✓	✓	✓	✓	✓	✓	✓	✓	(✓)	
Bats	(Summer roosting & activity)				(✓)	✓	✓	✓	✓	✓	(✓)		
Otters		Limited by vegetation cover and weather conditions rather than seasons.											

Key: ✓ Good/ appropriate. (✓) Sub-optional/ limited

3.3 Protecting Existing Wildlife

3.3.1 The best way to ensure existing wildlife remains protected, whether during the construction phase or long term after development has taken place, is to obtain as much up-to-date information on existing wildlife assets as possible and as early as possible.

3.3.2 In considering the protection of existing wildlife, developers / applicants need to:

- **Make sure** they consult with the Worcestershire Biological Records Centre and the Wildlife Trust to obtain current data and guidance on further investigations required.
- **Make sure** that up-to-date ecological information informs the design of any planning proposals and that they get the appropriate expert guidance. Provided this information is available as early as possible, wildlife features can be incorporated into the design as assets and with as little disturbance to them and the development process as possible.
- **Make sure** that during and after works adequate "wildlife corridors" are maintained between the development and adjacent habitats.
- **Make sure** that any disturbance to areas with nesting birds, roosting bats and/or BAP butterflies, for example, are scheduled to times where these species won't be present. Annual flailing of blackthorn hedgerows should be avoided and when undertaken, some sections should be left uncut, i.e. not the whole side of the hedgerow cut in one go, to avoid the loss of all Brown Hairstreak butterfly eggs present.
- **Make sure** that the layout allows sufficient working room around habitats which are to be retained. They will also need adequate space within the future use of the site to ensure that they can thrive in the long term.

3 What To Look Out For

- **Make sure** you consider ways to exclude protected species and BAP species occupying nearby habitats from entering the construction site. This could be done by, for example, erecting reptile exclusion fences. It should be noted that it might be necessary to obtain a license from Natural England for the exclusion of certain protected species (e.g. great crested newts). This could have an impact on the timing and design of the development!

- **Make sure** that potentially sensitive and damaging works are carefully supervised by an experienced ecologist and, if necessary, carried out by hand.

- **Make sure** that habitats on and adjacent to the site remain cared for after completion of the development by considering their maintenance requirements as part of the planning and design process by appointing a person or organisation to carry out the required management and/or monitoring.

- **Make sure** that workmen are made aware of protected species legislation, receive guidance on how to identify and deal with protected and BAP species they are likely to come across and are alerted to any sensitive areas within or next to the development site.

- **Remember** that even when planning permission has been granted, protected species legislation still applies and you may still be required to obtain a license for activities which could affect certain species. Should protected species be found during development, please stop work immediately and seek advice from Natural England.

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4 Providing Benefits For Wildlife

4.0.1 Although development is often perceived as being a 'bad thing' for wildlife and biodiversity, there are many ways in which we can ensure that new and existing development can actually provide benefits for wildlife. This can range from simply choosing the correct plants within your garden to large-scale innovative planning proposals that have the needs of wildlife as a central theme.

4.0.2 For many centuries important habitats have either been lost or degraded within the Wychavon District. From large ancient woodlands to small ponds, habitats have been lost at a worrying rate resulting in a continued decrease in wildlife and biodiversity within the area. The remaining habitats are now divided and fragmented by roads, towns, railway lines and farmland leaving species increasingly vulnerable.

4.0.3 An additional challenge for the survival of many species is presented by the effects of climate change, which have already had an impact on migration patterns, population ranges and the seasonal and reproductive behaviour of certain species. Local species extinctions are more likely in a landscape where habitats are getting degraded, smaller and isolated. It is therefore crucial to work together at building networks, look at creating connections in order to improve movement and dispersal of species. This will make it more likely for vulnerable species to adjust to many changes.

4.0.4 By re-creating lost habitats and managing our land in sympathy with the needs of wildlife we can halt the decline of many of our important native species and hopefully begin to restore them to their natural and secure population levels and distributions. Although you may not consider your garden to be a wildlife haven, a few simple measures can be undertaken to encourage more species and allow for threatened plants and animals to travel across the landscape as they once freely did.

4.0.5 If you would like further information on how to adapt your garden for the benefit of wildlife, please visit the Worcestershire Wildlife Trust website at: http://www.worcswildlifetrust.co.uk or Butterfly Conservation´s website at www.butterfly-conservation.org.

4.0.6 In the same way, developers can assist the movement of species across a new development by creating corridors of native trees and shrubs, allowing buffer zones alongside waterways, and by including open areas of semi-natural habitat within the site. Such corridors and areas of semi-natural habitat can be aligned with other open space needs, for example SuDS and (in some circumstances) public amenity spaces, flood defence, air quality benefits and/or other green corridors, as and where appropriate. These measures may assist the movement of species between locally important wildlife areas and help improve the long-term prospects of species survival. Innovative designs that show a strong desire to bring biodiversity benefits are far more likely to be granted planning permission than proposals that include little or no consideration for the future of wildlife in the area. Often the measures necessary to conserve and enhance biodiversity are inexpensive and simple to implement, yet they are essential for the wider vision of sustainable development. Effective planning and forward thinking can ensure that continued development and urban regeneration can be maintained alongside an improvement in biodiversity and wildlife within Wychavon and beyond.

4.1 Planting - Basic Principle

4.1.1 The key to planting with wildlife in mind is to use native species to achieve maximum biodiversity. Planting should provide sufficient undisturbed areas for wildlife to become established.

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4.1.2 Most wildlife is capable of surviving quite close to the urban activities of man but must be given the opportunity to begin with.

4.1.3 Do not forget to take note of the following:

- **Make sure** that wildlife and nature conservation requirements are considered as part of the overall design process at an early stage.
- **Make sure** that an ecological survey is carried out at feasibility stage where appropriate and taken full account of.
- **Make sure** that proposals for the site or building are in sympathy with natural features, and effectively utilise existing landform and vegetation and that provision is made for the future management of these features.
- **Make sure** that the planting proposals sit well within the context of surrounding and/or nearby landscape and habitat features to maximise connectivity.
- **Make sure** that full and properly specified planting proposals are drawn up and carried out.
- **Make sure** that indigenous species and, wherever possible, of local provenance, are included in an appropriate manner.
- **Make sure** that your proposals are sustainable and that full consideration has been given to ongoing maintenance.
- **Make sure** that any buildings contain suitable habitat features and are designed according to environmental principles.

4.1.4 Each site will be different, and species selection should reflect local conditions and opportunities. Proper design principles should be followed taking into account ecological balance together with all other criteria such as habitat value, visual effect, community value, appropriateness and style of management. Shrub understoreys should be sustainably designed and related to tree cover and subsequent management. Overall woodland/ copse design should provide for multi-storied sustainable planting including the herb layer. Also make sure that the proposals take account of the surrounding landscape and linking sites, to ensure that the new scheme is “tailored“ to its wider position in the District (see also Worcestershire County Council's Landscape Character Assessment).

4.1.5 Further information can be found in the specific landscape guidance notes produced by Wychavon District Council: "Landscape Proposals Advice Note" and "General Landscape Advice Note".

4.2 Private Gardens

4.2.1 Gardens, both individually and in groups, provide particularly diverse and attractive habitats for wildlife. Considered design can enhance this habitat quality further, particularly in terms of biodiversity, without compromising traditional garden functions such as visual appearance, play space, vegetables and general family leisure. Gardens of any size can provide excellent habitat, whether they are new plots or established gardens. By choosing the right plants for the right location it is possible to provide food and shelter for various insects and animals and create a garden which is full of character and interest. Areas of hard paving should be minimal and in balance with the space.

4.2.2 Do not forget to take note of the following:

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- Work with nature and plant species suited to the existing conditions and soil types. Use natural contours if possible and consider ponds or permanently wet areas at low level.
- Use native structure planting such as hedges and fruit trees to surround the garden or as a backdrop, where space allows, to provide nest sites, winter shelter and berries for food.
- Keep a wild patch left undisturbed. Plants condemned as weeds are often vital to wildlife, for example nettles are the egg laying plant for Peacock, Red Admiral and Small Tortoiseshell butterflies. You could also add piles of logs or rubble.
- Use scented plants, particularly pleasant near kitchen or patio, and widely used by butterflies as a nectar source.
- Mature trees and hedgerows are extremely important and will already support an intricate ecological system. Carefully managed they can form the basis of the best wildlife gardens.
- Use climbing plants to cover walls and fences and as effective shelter and nest sites for birds.
- Create a pond or boggy area. This will provide a whole new range of habitats and greatly enhance the wildlife value of the garden. It will provide a haven for amphibians and attract birds. Well designed ponds may attract dragonflies (see section 4.5 on "Pond Restoration and Design").
- Do not use pesticides or herbicides as these may upset the ecological balance of the garden and many natural pest controls.

4.3 Residential Layouts And Design

4.3.1 Sustainable development must and should live with nature. Integrating existing and newly created natural features, considering wildlife and nature conservation at every stage should greatly benefit any housing design by creating a high quality living environment. Whole layouts or individual buildings imposed onto sites without this consideration will compare poorly with those where the environment has been a major design criteria since feasibility.

4.3.2 Do not forget to take note of the following:

- **Make sure** that wildlife and nature conservation requirements are considered as part of the overall process at an early stage.

- **Make sure** that proposals for the site or building are in sympathy with natural features, and effectively utilise existing landform and vegetation. Where appropriate, a tree survey based on BS5837:2005 (Trees in Relation to Construction) and an ecological survey and assessment should be the basis of the development proposals.

- **Make sure** that appropriate native species planting is used to create a natural habitat corridor. Consider other species only as ornamental frontage, if appropriate, and when space allows.

- **Make sure** the layout contains some open space in particular around existing trees or groups of trees.

- **Make sure** that rear garden arrangement takes advantage of existing linking features such as hedgerows and ditches, so that more effective wildlife corridors are created. Gardens should be as large as possible and contain minimal hard paving.

- **Make sure** that no change in ground levels is carried out within a safe distance from existing retained trees. The distance needs to be carefully considered against the recommendations of BS5837:2005 (Trees in Relation to Construction).

- **Make sure** that drainage runs or trenches do not cross roots of any existing trees retained. (Take note of BS5837!)

- **Make sure** that sufficient space is left for structural landscaping which links together into an effective framework and into open or natural areas surrounding the site.

- **Make sure** that some planting provides wildlife with shelter, food and general habitat. Use indigenous trees where appropriate.

- **Make sure** you considerusing Sustainable Drainage Systems and "Green Roofs" wherever possible. Ensure that the layout and design of the development allows sufficient space to provide SuDS (i.e. ponds, wetlands, swales and soakaways) to be incorporated into the open space or structural landscape provision.

- **Make sure** that when you include sources of renewable energy, they do not impact negatively on existing wildlife. For example, try to site wind turbines away from bat and bird foraging and migrating habitats such as hedgerows and check that solar panels don't block access to bat roosts etc.

4.3.3 Further information can be found in the specific landscape guidance notes produced by Wychavon District Council: "Landscape Proposals Advice Note" and "General Landscape Advice Note".

4.4 Roads, Access Ways And Footpaths

4.4.1 Linear features such as roads and footpaths frequently provide effective wildlife corridors, especially when the maintenance regime is one of infrequent disturbance. A good example of this is the common sight of kestrels near motorways, where small mammals find the embankments a more attractive habitat than the often intensively farmed land nearby. Opportunities to enhance this important potential for wildlife corridors are many but are often not recognised or sufficiently utilised.

4.4.2 Footpaths across development sites are ideal opportunities to create corridors for wildlife as well as people. Adequate and bio-diverse verges are most important in this respect. When considering the development of a site with existing features which may act as corridors for established wildlife movements, careful consideration needs to to be given to the proposed layout, so that new roads or buildings do not break potential links between habitats. Survey work should recognise this and make provision for a suitably designed crossing.

4.4.3 Do not forget to take note of the following:

- **Make sure** that wildlife and nature conservation requirements are considered as part of the overall design process at an early stage.

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- **Make sure** that the movements of wildlife are fully taken account of. Where linear features create unavoidable barriers to wildlife, the design of the development needs to make provision to allow the affected wildlife safe passage across. For example toad crossings between hibernation and breeding sites or suitable alternative links such as "green bridges".
- **Make sure** that existing linear features such as hedgerows, drystone walls and ditches are conserved and fully utilised in planning alignments.
- **Make sure** that verge widths are adequate enough to contain grass and shrub / hedgerow planting preferably with trees, at least along one side of the access way. A wide green corridor on one side is better than narrow corridors on both sides.
- **Make sure** that appropriate native species (of local provenance wherever possible) are used to create a natural habitat corridor. Consider other species only as ornamental frontage, if appropriate, and when space allows.
- **Make sure** that sufficient buffer zone distances are allowed between road activity and main habitat corridors or areas.
- **Make sure** that cycle barriers, gates and fencing are appropriate to their setting, where possible using local designs.
- **Make sure** that lighting design is specific to the highway or footway/ bridleway. Stray artificial light should not fall on wildlife areas or adjacent space.
- **Make sure** that management of verges and general management does not conflict with wildlife interests. Regular verge cutting should be kept to a minimum, preferably a narrow strip behind the kerb line. Other grass should be managed as meadow and cut at most three times per year based on the requirements of the flora it supports. Hedges should not be "over tidy" and should be managed carefully to avoid disturbance during nesting seasons.

4.5 Pond Restoration And Design

4.5.1 Ponds vary greatly in character and requirements according to what species they support and where they are sited, so each should be considered individually. However,

4.5.2 Do not forget to take note of the following general guidelines:

- As a wildlife habitat, ponds are clearly linked to the surrounding land. Thus when designing a pond, as large an area as possible should be retained adjacent to it.
- Consider pond and wetland areas in conjunction with Sustainable Drainage Systems (SuDS).
- Before development a survey will be required to assess those species already present. In particular, the great crested newt, although rare on a European scale, is commonly found within Wychavon. The survey results will affect extent and timing of proposed works. (Please also see Section 3.2, "Brief Guidance on Surveys")
- Where a new pond is to be created on a currently undeveloped site, it will be necessary to submit an assessment of the current land use to establish whether or not a habitat of existing value in its own rights is already present.
- The clearing of vegetation, de-silting, and re-contouring of banks are all operations often required in neglected ponds. Creating "shelves" on the pond edge will create different depths and support

a wider variety of species. It is recommended that these operations are carried out over two years in the correct season in order to reduce adverse impact to wildlife.

- Maintenance of water levels is an important factor, particularly when ground water runoff to the pond has been restricted due to adjacent building development. A clean water supply can be made available from roof rainwater runoff directly or via a reedbed into the pond from adjacent buildings. An overflow from the pond will be needed in this case.
- Many ponds in the Wychavon District are seasonal, i.e. they may dry up at the height of summer. This is not necessarily undesirable, since amphibians are on land by this time. That way the pond is unable to support fish which prey upon tadpoles, for example.
- Contaminated water (e.g. run off from car parks) should be drained away from the pond. However, where there is sufficient space, the potential to clean the water through a reedbed system or other treatment option should be investigated.
- Most existing ponds have a natural clay "liner" and it is not normally necessary to install an artificial liner. At ponds where an artificial liner is desirable it is crucial to ensure that it cannot be punctured by sharp stones, for example.
- Public (and livestock) access to ponds must be safe and must not conflict with wildlife use. Generally, by deliberately attracting the public to one particular place on the pond's edge (by shallow beaches /interpretation panel/ boardwalk/ seats) it is possible to deter them from access along the other pond banks. This can be reinforced by restrictive planting elsewhere, making these areas undisturbed havens for wildlife.
- It is generally recommended that ponds, and particularly their edges, are shallow; a central pond depth of 1 metre should be sufficient to retain water through most summers.
- Leave your new pond to colonise naturally if at all possible.
- Where the pond is to be incorporated into an urban development, natural colonisation may not be an option. In those cases, preference should be given to planting native species of local provenance. Pond plants should be taken with due care from nearby local ponds in order to preserve the indigenous variety of species.
- A wide variety of marginal and aquatic planting will provide a more valuable and diverse habitat. Where possible encourage plants to grow in different densities and range of water depths and include some plant species suitable for newts to lay their eggs on.
- In particular, the following species should be included for newts to lay their eggs on:

Flote grass
Water forget me not
Hairy willow herb
Water cress
Water mint

- Where stock is brought in from other sources it should be free of fish eggs, if amphibians are to be present in the pond.
- When restoring a pond, as much existing vegetation should be retained as possible.
- It is preferable not to plant very vigorous species since they will incur considerable management to thin out.
- The following list of invasive alien species must **NOT** be planted:

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Australian swamp stonecrop / New Zealand pigmyweed (Crassula helmsii)
Parrots feather (Myriophyllum aquaticum)
Floating pennywort (Hydrocotyle ranunculoides)
Japanese knotweed (Fallopia japonica)
Waterferns (Azolla filiculoides & A caroliniana)
Indian/Himalayan balsam (Impatiens glandulifera)
Water lettuce (Pistia stratiotes)
Giant salvinia (Salvinia molesta)
Water hyacinth (Eichornia crassipes)
Water chestnut (Trapa natans)
Canadian pondweed (Elodea canadensis)
Nuttalls pondweed (E. nuttallii)
Curly waterweed (Lagarosiphon major) (Source: Ponds and wildlife information leaflet (RSPB 2002))

- The area around a pond should provide an attractive setting and should contain a variety of habitats. Where great crested newts are present it may be necessary to construct a 'hibernaculum' (i.e. a place to shelter for the winter) for them, which could simply be a pile of bricks, rubble and/or logs with some topsoil.
- It is extremely important that a pond is not just an island of isolated wildlife habitat within a development site. In order to be of true wildlife benefit it must be connected to other habitats through green corridors, e.g. hedgerows, landscaped footpaths, woodland etc. (see also 4.4, "Roads, Access Ways and Footpaths")
- In all cases make sure that provision is made for the future management of ponds and water features either new or retained as part of developments.
- For further information you may wish to contact The Ponds Conservation Trust: http://www.pondconservation.org.uk

4.6 Buildings

4.6.1 Buildings often provide valuable habitat in themselves and can, by their siting and orientation, affect the potential of adjacent habitat for wildlife. Many species rely on buildings or structures for breeding sites or shelter. The barn owl, for example, has suffered in recent years from the decline in old barns and outbuildings and the nest sites they provided. Bats, also, are often excluded from modern buildings but could easily be provided for without compromising good design or energy efficiency. Many historic buildings can be a particularly attractive habitat, and the features they display should not be designed out of new buildings. (See also Supplementary Planning Document on the "Re-use of Rural Buildings").

4.6.2 Do not forget to take note of the following:

- **Make sure** that existing buildings to be demolished are carefully checked for existing nests and surveyed for their bat roost potential.
- **Do not** carry out repair works to the roof of your building without investigating whether bats may be present. Where existing bat roosts are likely to be damaged, disturbed or destroyed, please

seek advice from Natural England as to whether a European Protected Species license may be required. If needed, this may have timing and/or design implications.

- **Make sure** that all new buildings and those to be converted consider how to incorporate new and existing bat roosting provisions. This can be in the form of adding bat boxes in suitable locations on the building (advice on bat boxes can be obtained from the Bat Conservation Trust), adjust roof design to allow access and accommodate existing and/or new roosts into refurbished buildings.
- **Make sure** that existing bird nest sites are either conserved or the possibility is investigated and implemented to provide artificial nest sites for suitable bird species in new buildings eg. bird boxes or purpose designed "brick" bird boxes.
- **Make sure** that on appropriate sites adjacent to countryside, in appropriate buildings, barn owl nest sites are provided.
- **Make sure** that chemical or paint treatments to timber or other parts of the building are "wildlife friendly". Do not use Lindane, P.C.P., or T.B.T.O. based products.
- **Do not use** tropical hardwoods.
- **Make sure** the building is designed for energy and water efficiency.
- **Make sure** you consider the possibility of incorporating a "Green Roof".

4.7 Industrial Development

4.7.1 Although many industrial activities are extremely unattractive to wildlife, and indeed in many cases damaging, opportunities exist on most sites to design habitat into industrial schemes. In many cases such developments can be ideal because areas may be left relatively undisturbed by the way a site is operated, and because such sites tend to be relatively large. Again, existing site features may be important, and buffer zones which can easily become areas of high habitat value if designed properly. The buildings themselves may also present opportunity.

4.7.2 Do not forget to take note of the following:

- **Make sure** that wildlife and nature conservation requirements are considered as part of the overall design process at an early stage.
- **Make sure** that proposals for the site or building are in sympathy with natural features, and effectively utilise existing landform and vegetation. Look for links into adjoining habitats and landscape features to improve connectivity.
- **Make sure** that an ecological survey is carried out at feasibility stage and taken full account of.
- **Make sure** that indigenous plant species are included in the landscape proposals wherever appropriate.
- **Make sure** that existing linear features such as hedgerows and ditches are fully utilised in planning alignments, and that provision is made for their future management.
- **Make sure** that existing brownfield habitat features, which can be highly valuable for rare and declining invertebrates, are retained and/or recreated within a development where possible.

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- **Make sure** that road design incorporates traffic calming measures wherever possible.
- **Make sure** that lighting design does not prejudice commuting, foraging and roosting habitats for bats and other nocturnal animals, such as otters and night-flying birds, for example.
- **Investigate** how site development may allow for parts of the site to accommodate temporary use for appropriate habitats, e.g. meadowland on future expansion areas or nutrient poor subsoil.
- **Make sure** that Sustainable Drainage Systems are incorporated wherever possible.
- **Educate personnel** in environmental matters and site features for habitat.

4.8 Sustainable Drainage Systems

4.8.1 Sustainable Drainage Systems (SuDS) are an alternative means of ensuring that new drainage systems take into account long-term environmental and social factors. Many existing traditional systems can cause problems of flooding, pollution or damage to the environment and are not proving to be sustainable. A further advantage of SuDS schemes is that they can serve a dual purpose by creating wetland habitats and providing a corridor for wildlife to move across the often impenetrable urban landscape.

4.8.2 Cost-effective techniques which could even be fitted to existing developments can provide the following benefits:

- Manage runoff flow rates, reducing the impact of urbanisation on flooding;
- Protect or enhance water quality;
- Are sympathetic to the environmental setting and the needs of the local community;
- Provide a habitat for wildlife;
- Encourage natural groundwater recharge (where appropriate);
- Enhance the landscape and amenity value of the development site and its surroundings.

4.8.3 They do this by:

- Dealing with runoff close to where the rain falls by increasing the amount of water allowed to infiltrate the ground;
- Managing potential pollution at its source now and in the future;
- Protecting water resources from point pollution (such as accidental spills) and diffuse sources by moderating flows and filtering run-offs.

4.8.4 Do not forget to take note of the following:

- **Make sure** you consider incorporating SuDS into every development.
- **Consider** "retro-fitting" SuDS features to existing developments. They can be used on a wide range of developments and are not limited to large-scale developments.

- **Make sure** they are part of the evaluation and design process from the very beginning to ensure that surface water can be appropriately managed on site and that enough space is available for them within the development layout.
- **Make sure** SuDS are submitted as part of a planning application.
- **Make sure** existing natural features such as ditches and ponds are taken account of and incorporated into the scheme where appropriate.
- **Make sure** a species and habitat survey has been carried out to inform the scheme where appropriate.
- **Make sure** future maintenance, management and adoption is part of the design considerations.
- **Make sure** the techniques used are based on a careful study of local conditions.
- **Consider** incorporating features such as ponds and lakes; a reduction of the amount of hard surfaces and replacing them with permeable pavements; filter strips, swales and basins as part of the landscape design; "Green Roofs" and better rainwater use; infiltration and filter drains etc.

4.9 Green Roofs

4.9.1 At a time when increasing pressure on land for housing often means a decreasing amount of space available for gardens, opportunities for additional green space by creating "Green Roofs" should be grasped wherever possible. Many open habitats such as those created by green roofs are often in danger of becoming overgrown in nature or are found on brownfield sites due to be developed.

4.9.2 Green roofs provide many benefits, such as reducing water run-off (see also 4.8, "Sustainable Drainage Systems"), providing natural insulation and noise reduction, protecting roofs from the elements and biodiversity gains through providing additional habitat for rare and/or protected species and creating potential links for the movement and dispersal of wildlife, especially important in areas which are otherwise lacking in wildlife habitats.

4.9.3 There are three basic types of "Green Roofs": extensive, semi-extensive (also known as semi-intensive) and intensive. The varying factors are the amount and kind of maintenance required, the depth of soil and the type of plants the roof will support.

4.9.4 Many existing roof structures are suitable to be retrofitted, especially with the light weight of an extensive green roof. Whilst flat roofs are best suited, others, apart from those with very steep slopes, could be adapted to allow them to become "green". Garages, sheds, extensions, outhouses and even balconies can all be adapted to take a "Green Roof". New buildings, whether large or small, can be designed to bear the appropriate load for the intended use and type of green roof.

4.9.5 Do not forget to take note of the following:

- **Consider** the possibility of incorporating green roofs on all developments. This may involve new or retrofitted green roofs.
- **Make sure** you obtain the necessary background data (e.g. from the Worcestershire Biological Records Centre) to inform your design.

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- **Make sure** you decide on the main reason and purpose of the green roof (e.g. biodiversity in general, support of a particular habitat or species, runoff attenuation etc.) and the potential for future management before designing the type and style of the roof.
- **Make sure** you consult with, for example, the Worcestershire Wildlife Trust, Butterfly Conservation and the Council's natural heritage officer during the design process.
- **Make sure** the structure of the building is sound and can take the load (assess the possibility of some structural strengthening) and that the existing waterproofing is sound and does not leak (assess the possibility of renewing the roofing layer) when retrofitting a green roof.
- **Investigate** which local or regional habitats could be recreated on the roof and which species might benefit.
- **Consider** the most appropriate and locally easily available soils and aggregates. The use of local substrates will help to replicate the conditions at ground level.
- **Make sure** you find out which plant species would be most likely to flourish in the conditions to be created.
- **Make sure** you use a native seed mix or plug plants of local provenance together with sedum species.
- **Make sure** you try to increase biodiversity on the roof by creating a range of micro habitats by including areas of shingle, gravel and stones which will stay bare, provide areas where deeper soil levels may be possible to allow taller vegetation to grow and by placing dry rotting logs on the roof.

4.9.6 For further information on "Green Roofs" and how to construct one, contact Natural England and/or http://www.livingroofs.org.uk

Appendix 1 - List of Contacts 1

For any queries regarding biodiversity and planning proposals:

Wychavon District Council Planning Services

Heritage Section
Civic Centre
Queen Elizabeth Drive
PERSHORE
WR10 1PT

Contact: Susanne Hiscock, Tel: 01386 565180
Landscape and Natural Heritage Officer

E-mail: susanne.hiscock@wychavon.gov.uk

For general local wildlife information:

Worcestershire Wildlife Trust
Lower Smite Farm
Smite Hill
Hindlip
WORCESTER

Tel. 01905 754919

Website: http://www.worcswildlifetrust.co.uk

For policy and legislation, protected species, SSSI's or National Nature Reserve advice:

Natural England
Block B
Government Buildings
Whittington Road
Worcester
WR5 2LQ

Tel.: 01905 763355

Website: http://www.naturalengland.org.uk

For background data on local fauna, flora and sites:

Worcestershire Biological Records Centre
Lower Smite Farm
Hindlip
WORCESTER
Wr3 8SZ

1 Appendix 1 - List of Contacts

Tel. 01905 759759

Website:http://www.wbrc.org.uk

For information or advice relating to badgers:

Badger Trust
2B Inworth Street
London
SW11 3EP

Tel. 020 7228 6444

Website: http://www.nfbg.org.uk

Email. enquiries@badgertrust.org.uk

For information on buildings and nesting boxes for owls:

The Hawk and Owl Trust
P.O. Box 100
Taunton
TA4 2WX

Tel. 0870 990 3889

Website: http://www.hawkandowl.org

For pond design and management advice:

Pond Conservation
School of Life Sciences
Oxford Brookes University
Gipsy Lane, Headington
Oxford
OX3 0BP,

Tel. 01865 483249

Website: http://www.pondconservation.org.uk

Email: info@pondconservation.org.uk

For advice on bird habitats, bird protection and conservation and bird boxes:

The RSPB
The Lodge

Appendix 1 - List of Contacts 1

Sandy
Bedfordshire
SG19 2DL
United Kingdom

Tel: 01767 680551

Website: http://www.rspb.org.uk/

For advice on bat protection and bat boxes:

The Bat Conservation Trust
Unit 2, 15 Cloisters House
8 Battersea Park Road
London
SW8 4BG

Tel: 020 7627 2629

Fax: 020 7627 2628

Website: http://www.bats.org.uk

For more information on survey, habitat management and creation for butterflies and moths:

Butterfly Conservation
Manor Yard
East Lulworth
Wareham
BH20 5QP

Tel: 01929 400209

Email: info@butterfly-conservation.org

Website: http://www.butterfly-conservation.org

For more information on amphibians and reptiles:

Froglife
Swan Court
Cygnet Park, Hampton
Peterborough
PE7 8GX

Tel: 01733 558960

1 Appendix 1 - List of Contacts

Website: http://www.froglife.org

For information on wider countryside access, advice on landscape and nature conservation management and grant funding to communities and land managers:

Countryside Service
Worcestershire County Council
County Hall
Spetchley Road
Worcester
WR5 2NP

Tel: 01929 768214

Website: http://www.worcestershire.whub.org.uk/home/wccindex/wcc-countryside

Appendix 2 - Glossary 2

Glossary (based on "Developing Naturally" by Michael Oxford)

Avoidance Measures taken to avoid adverse impacts, such as locating the main development and its working areas and access routes away from areas of high ecological interest, fencing off sensitive areas during the construction period, or timing works to avoid sensitive periods. Also includes alternatives and "do nothing" options.

Biodiversity Biodiversity encompasses the whole variety of life on Earth. It includes all species of plants and animals, but also their genetic variation, and the complex ecosystems of which they are part. It is not restricted to rare or threatened species but includes the whole of the natural world from the commonplace to the critically endangered.

Compensation Measures taken to offset/compensate for residual adverse effects which cannot be entirely mitigated. These usually take the form of replacing (or at least trying to) what will be lost, e.g. the relocation of important grassland habitats from the development site to another area identified as suitable or the creation of new habitats.

Connectivity A measure of how connected or spatially continuous a corridor or network is. (The fewer the gaps the higher the connectivity), allowing, for example, an animal to move through different types of landscape elements.

Conservation A series of measures required to maintain or restore natural habitats and populations of species of wild fauna and flora (Article 1 of the Habitats Directive).

Direct Impact An outcome that is directly attributable to a defined action.

Disturbance Disruption of normal processes or behaviour.

Enhancement A genuine attempt to increase the value and importance of biodiversity interest. Usually applied to areas where there is already some existing interest that can be improved e.g. through improved management, with the result that there is new benefit to biodiversity.

Fragmentation The breaking up of a habitat, ecosystem or land-use type into smaller parcels.

Habitat A place in which a particular plant or animal lives.

Indigenous Species A species (animal or plant) which is native to a particular region.

Indirect Impact They are often (but not necessarily) time-delayed or at some distance from their source.

Local Provenance Here used to describe planting material of native origin that is destined for use in the same local area as it was collected.

Mitigation Measures taken to reduce impacts, e.g. modifications or additions to the design of the development, such as the creation of reed bed silt traps to prevent polluted water running directly into ecologically important watercourses.

2 Appendix 2 - Glossary

Net gain The point at which the quality and quantity of habitats or species improves compared to their original condition, i.e. improvements over and above those required for mitigation/compensation.

Red Data Book Red Data Books provide information about the rarest and most threatened flora and fauna. Each Red Data Book deals with a specific group of animals and plants (e.g. reptiles, insects or mosses) and they are classified into different categories of perceived risk.

Restoration The re-establishment of a damaged or degraded system or habitat close to its pre-degraded condition.

Stepping Stone An ecologically suitable patch where an animal temporarily stops while moving from one habitat to another.

Wildlife Corridor A strip of a particular type that differs from the adjacent land on both sides and can act as a connection for animals to travel between habitats or as a habitat in its own rights.