Environmental Sustainability

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OXFORD CITY COUNCIL

Technical Advice Note: Biodiversity

Planning Application Guidance

Updated April 2021

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1. INTRODUCTION

Purpose of this Document

This Technical Advice Note (TAN) outlines Oxford City Councils requirements for information on biodiversity to be supplied in support of planning applications. It has been produced to summarise the approach we expect developers to take in avoiding, mitigating and compensating for biodiversity impacts in Oxford. The TAN also provides guidance for developers and planners on how to enhance and make space for nature within new developments.

` This document sets out the following:

- The legislative and policy framework governing how biodiversity must be considered in the planning process;
- Key biodiversity assets located within Oxford;
- Guidance for developers on the need for consideration of a sites ecological value;
- Planning conditions and how these apply in relation to biodiversity;
- An overview of ecological mitigation measures; and
- Options for biodiversity enhancements.

This TAN does not replace appropriate guidance or legislation, rather aims to clarify how to provide correct information in support of planning applications, in compliance with local and national policy. While the document aims to provide an overview, it must be considered that each site is different; therefore it is encouraged that applicants contact the Oxford City Council Ecology Officer with any specific requirements at biodiversity@oxford.gov.uk.

What is Biodiversity?

The widest possible definition of biodiversity includes all living things, including all species of plants and animals and the complex ecosystems which they are part of. Biodiversity is central to the natural processes that we all rely upon. Given that some form of biodiversity occurs virtually everywhere, the City Council needs to take a practical approach to protecting and enhancing the most important biodiversity assets found in Oxford. So, for the purposes of applying this TAN, the main focus will be on the following:

- **Statutory Sites** – Internationally designated for nature conservation and/or geological interest, including Special Areas of Conservation (SACs), or nationally designated, including Sites of Special Scientific Interest (SSSIs).
- **Non-statutory Sites** – Sites of local importance for nature, including Local Wildlife Sites (LWSs), Local Nature Reserves, Conservation Target Areas (CTAs), City Wildlife Sites (CWSs) and the emerging Nature Recovery Network for Oxfordshire (NRN).
- **Protected Species** which are protected due to their conservation status under European and/or domestic legislation. European Protected Species include, but are not limited to, all bats, Dormouse *Muscardinus avellanarius*, Otter *Lutra lutra* and Great Crested Newt *Triturus cristatus*. Other species such as Badger *Meles meles* are protected from harm under domestic law on welfare grounds.

- **Habitats and Species of Principal Importance** as defined by the Secretary of State in consultation with Natural England, under the Natural Environment and Rural Communities Act 2006.

Why is Biodiversity Important?

The natural environment must be at the heart of planning decisions to provide protection and enhancements, not only for wildlife, but for the benefit of future generations. Biodiversity is crucially important to us socially and economically, providing us with "ecosystem services", considered broadly as the benefits that people gain from the natural world. As defined in the Millennium Ecosystem Assessment (2006) these include:

- **Supporting** services such as nutrient recycling, primary production and soil formation;
- **Provisioning** services such as food, water, medicines and energy;
- **Regulating** services such as pollination, carbon sequestration and climate regulation, pest and disease control, decomposition of waste, and purification of water and air; and
- **Cultural** services including health and wellbeing, recreation, science and education, and maintaining historical and cultural identity.

Development: Threat or Opportunity?

Overall development has the potential to impact negatively on biodiversity, both in isolation and in combination with other projects. We as humans have caused overwhelming losses in biodiversity[1] and have a moral obligation to protect and enhance our environment in order to reverse this decline.

Impacts of development on biodiversity include:

- Habitat damage, loss and fragmentation;
- Harm to species, directly and indirectly through habitat loss and change;
- Damage to habitats and impacts on species through improper land practices and poor management;
- Spread of non-native species; and
- Pollution events, including impacts on water and air quality.

Development can however have numerous positive benefits for biodiversity and, as discussed later in this TAN, when schemes are designed with nature in mind, the benefits are far reaching. The benefits of creating space for wildlife not only help biodiversity, but can provide many opportunities for human health and wellbeing.

There is an ever-growing evidence base demonstrating that people who live in nature-rich environments are mentally and physically healthier and more productive, with more cohesive communities. In a densely populated urban area like Oxford, this is a particularly important additional reason to conserve and enhance biodiversity.

An example study is a campaign developed by the Wildlife Trusts called '30 Days Wild'[2], which asked people to engage with nature every day for a month. The results showed a statistically significant increase in health, happiness and connection to nature, along with an increase in active behaviours related to nature, such as feeding garden birds and planting flowers for bees.

[1] Making Space for Nature. John Lawton, 2010

[2] Richardson M, Cormack A, McRobert L, Underhill R (2016) 30 Days Wild: Development and Evaluation of a Large-Scale Nature Engagement Campaign to Improve Well-Being. PLoS ONE 11(2): e0149777.

Well thought-out developments can improve habitat connectivity and condition, helping to provide the right habitat in the right location, ensuring that green infrastructure networks and landscape scale benefits for species occur, perhaps connecting otherwise isolated pockets of biodiverse habitat.

2. LEGISLATION

Key Acts and Regulations

In reaching planning decisions, Local Planning Authorities must ensure that the requirements of all relevant wildlife legislation are fully taken into account. Keys pieces of domestic and European legislation include:

- Wildlife and Countryside Act 1981 (as amended)
- Natural Environment and Rural Communities Act 2006 (NERC)
- Protection of Badgers Act 1992
- Hedgerow Regulations 1997
- The Conservation of Habitats and Species Regulations 2017 (as amended)
- The Town and Country Planning Environmental Impact Assessment Regulations 2017
- Countryside and Rights of Way Act 2000

Further details of each Act are not provided within this document, however full advice may be found on The Joint Nature Conservation Committee (JNCC) website[3].

Together, these pieces of legislation provide varying levels of protection to species and habitats within England, which must fully be taken into account when making planning decisions. Section 40 of the NERC Act states:

"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. Where conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat."

European Protected Species

Photo Credit: Louise Fox

European Protected Species (EPS) are listed under Annex IV(a) of the European Communities Habitats Directive and receive protection in the UK under the Conservation of Habitats and Species Regulations 2017 (as amended).

EPS that may be encountered in Oxford include, but are not limited to: all bats, Dormouse, Otter, Great Crested Newt, Creeping Marshwort *Helosciadium repens* and Early Gentian *Gentianella anglica*.

[3] http://jncc.defra.gov.uk/

Under the legislation it is an offence to:

- Deliberately capture, injure or kill an EPS;
- Intentionally or recklessly disturb an EPS in its place of rest or breeding site;
- Intentionally or recklessly damage, destroy or obstruct access to an EPS place of rest or breeding site (even if the EPS is not occupying the site at the time); or
- Possess or sell or exchange an EPS (dead or alive).

If a development affects a European Protected Species, it will likely be necessary to obtain a European Protected Species Mitigation Licence from Natural England in order for the works to proceed. Planning permission must be granted prior to submitting an application to Natural England. Surveys for many protected species can only be carried out at certain times of year, therefore early consideration of the potential presence of European Protected Species is required to avoid unnecessary delays.

Habitats and Species of Principal Importance

Under Section 41 of the Natural Environment and Rural Communities Act 2006, the Secretary of State is obliged to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. This list guides decision makers such as Local Planning Authorities, as to their duty to have regard to the conservation of biodiversity in decision making.

There are currently 56 Habitats of Principal Importance on the s41 list, which are the habitats identified in England under the UK Biodiversity Action Plan (BAP). Habitats located within Oxford City include, but are not limited to:

- Traditional orchards
- Hedgerows
- Ponds
- Lowland calcareous grassland
- Lowland meadows
- Wet woodland
- Rivers
- Aquifer-fed naturally fluctuating water bodies
- Wet woodland

There are also 943 Species of Principal Importance included on the s41 list. Species encountered in Oxford City include Hedgehog *Erinaceus europaeus*, Water Vole *Arvicola amphibious*, Dormouse, Swift *Apus apus* and Slow Worm *Anguis Fragilis*, however an exhaustive list is not provided within this document.

Photo Credit: Louise Fox

Invasive Species

Photo Credit: Stephen Westmore

The Wildlife and Countryside Act 1981 is the key piece of legislation in respect of invasive non-native species. All invasive species are listed under Schedule 9 of the Act. It is illegal to plant or otherwise cause any invasive species to grow or spread into the wild. When encountered on a development site an Invasive Species Management Plan will be required.

Invasive species known to be present within Oxford include Japanese Knotweed *Fallopia japonica*, Himalayan Balsam *Impatiens glandulifera*, Signal (North American) Crayfish *Pacifastacus leniusculus* (pictured) and Mink *Neovision vision*.

3. PLANNING POLICY AND GUIDANCE

National Planning Policy

The National Planning Policy Framework (NPPF) sets out Government planning policy for England. A key aim of the NPPF is to ensure sustainable development, meaning development must be carefully planned to protect future generations. The NPPF is supplemented by information set out in Planning Practice Guidance.

Government Circular 06/2005 (Biodiversity and Geological Conservation) places statutory obligations on Local Planning Authorities in respect of how ecological assessments must be considered within the planning process. Paragraph 99 in particular sets out how the presence or otherwise of protected species must be established before planning permission is granted, unless there are exceptional circumstances (see British Standard BS42020:2013 below).

Local Planning Policy

The Oxford Local Plan 2036 was adopted on 8th June 2020. Developers should familiarise themselves with Policy G2: Protection of Biodiversity and Geo-diversity, which makes it clear that development that would result in a net loss of biodiversity will not be permitted. Development which negatively impacts sites of national or international importance (the Oxford Meadows Special Area of Conservation and SSSIs) with not be granted permission, unless there are exceptional circumstances.

Compensation and mitigation measures must offset any loss of biodiversity that would otherwise result from development. Applications for all major developments proposed on greenfield or vegetated brownfield sites must be supported by a biodiversity calculator, an approved version at the time of submission by Defra. It must be noted that the Thames Valley Environmental Records Centre calculator is no longer in use and will not be accepted.

The results of the calculator should demonstrate a minimum of 5% biodiversity net gain over the baseline.

Permitted Development

Although some forms of development do not require planning permission, permitted development rights do not override protected species and habitats legislation. Permitted development could for example, include the conversion of an agricultural barn, which has the potential to directly or indirectly harm protected species, such as bats and barn owl. An ecological assessment of the impacts of such development must still be undertaken.

The duty to protect species and habitats subject to permitted development lies with the landowner and is set out Statutory Instrument 596 (2015) The Town and Country Planning (General Permitted Development) (England) Order 2015[4].

[4] http://www.legislation.gov.uk/uksi/2015/596/pdfs/uksi_20150596_en.pdf

British Standard on Biodiversity

In 2013 the British Standard on Biodiversity (BS42020) was produced, which sets standards for assessment of biodiversity within the planning process. The British Standard provides guidance for all those who work in ecology, planning, land management, arboriculture and other professions which have implications for the conservation of biodiversity.

All ecological reports submitted as part of planning applications must be prepared to standards set within this code of practice. Any deviations must be fully explained and agreed with the LPA Ecology Officer.

Species-specific Guidelines

A wide range of species-specific guidelines have been produced and all ecological assessments and mitigation should follow this best practice, unless exceptional circumstances make a deviation acceptable. This must be discussed with and agreed with the Oxford City Council Ecology Officer in advance.

Your ecological consultant should be familiar with general and specific best practice and therefore a full list of guidance is not provided in this document, however a selection of key examples is suggested below:

- Bats
    - Bat Surveys for Professional Ecologists – Good Practice Guidelines, Bat Conservation Trust, 2016
    - Bats and Trees, Bat Conservation Trust 1997
- Amphibians and Reptiles
    - Herpetofauna Workers Manual, Gent, T. and Gibson, S, 2003
    - Reptiles: Guidelines for Developers, English Nature. 2004
- Badger
    - Badgers and Development, English Nature 2002
- Dormouse
    - The Dormouse Conservation Handbook. English Nature. 2006

4. BIODIVERSITY IN OXFORD

Photo Credit: Louise Fox and Colin Wilkinson

Oxford, although small, is incredibly fortunate in being home to an impressive range of species and habitats. Numerous sites of importance for wildlife conservation are present within the City, including nationally and internationally rare habitats and species.

Oxford residents and visitors can benefit from access to a beautiful and biodiverse landscape in both rural and urban areas. From the nationally rare fenland found within the Lye Valley, to floodplain meadows and ancient woodland, Oxford is extremely diverse. Oxford has a large number of allotments, which also provide valuable habitats and provide benefits to wildlife and people, and public open space, including a number of parks, is an important asset for the residents of the City.

Oxford also benefits from a wealth of passionate and dedicated people, with an abundance of knowledge, who care about the wildlife of the City, including numerous volunteer groups and skilled recorders.

Oxford Meadows Special Area of Conservation (SAC)

Oxford Meadows SAC, a site of European Importance for wildlife conservation, is largely located within the City of Oxford, with small sections situated within Cherwell and West Oxfordshire Districts. The SAC covers an area of approximately 266 hectares and comprises the following component Sites of Special Scientific Interest (SSSIs):

- Cassington Meadows;
- Pixey and Yarnton Meads;
- Port Meadow with Wolvercote Common and Green; and
- Wolvercote Meadows

Oxford Meadows qualifies as a European Site due to the lowland hay meadow (*Alopecurus pratensis, Sanguisorba officinalis*) habitats it supports (Annex I habitat). The site includes vegetative communities which are considered potentially unique, reflecting the influence of long-term traditional grazing and hay cutting. The site is also designated as a European Site as it supports Creeping Marshwort. Oxford Meadows is one of only two sites known to support the species in the UK.

Sites of Special Scientific Interest (SSSIs)

All, or part of, eleven different SSSIs fall within Oxford City. Others lie beyond the City in locations where indirect impacts of development in Oxford might need to be considered. Applications that may affect any SSSI should be supported by a full assessment of the likely impacts, and the potential for mitigation. Such impacts may not be limited to direct loss, but may need to consider potential indirect effects, such as hydrological changes to surface or groundwater sources, pollution to air, soils or water, and increased recreational use and disturbance.

Additional consideration shall be given to developments in the vicinity of the Lye Valley SSSI and the Milham Ford City Wildlife Site. An Infiltration Drainage and Pollution Control Scheme for roof and hard surfacing run-off is required where the development is in the catchment area of the above sites. This is because reduction in water entering the aquifer is threatening the survival of this nationally rare habitat. Applicants for development in this area should discuss the requirements with the Council at an early stage.

Locally Important Sites for Wildlife

Local Wildlife Sites (LWSs) are non-statutory sites of local importance for nature conservation, recognised for having high conservation value, containing rare species or habitats. In Oxford we have numerous LWSs, which although do not warrant statutory protection, do receive protection through national and local planning policy.

In addition Oxford has a number of other important wildlife sites known as City Wildlife Sites (formerly referred to as Sites of Local Importance for Nature Conservation (SLINCs)). Oxford City Wildlife Sites also have significant biodiversity value, however overall their interest has not been considered sufficient to be of county level importance in the same way LWSs are. With appropriate management, many do however have the potential to become LWSs in the future.

Conservation Target Areas (CTAs)

Conservation Target Areas identify the most important areas for wildlife conservation in Oxfordshire, where targeted conservation action will have the greatest benefit. CTAs were identified as part of Oxfordshire's Biodiversity Action Plan (BAP), developed in response to achieving 'more, bigger, better, joined habitats' following the Lawton Review,

In general, development that would prevent the achievement of the aims of a CTA should be avoided. In many cases this involves protecting the designated and priority habitats and species in the CTA, but consideration should also be given to whether development will affect habitat connectivity, either positively or negatively.

Further information on the three CTAs that overlap with Oxford City ("Oxford Meadows and Farmoor"; "Thames and Cherwell at Oxford"; and "Shotover") including specific habitat targets and objectives can be downloaded here:

https://www.wildoxfordshire.org.uk/biodiversity/conservation-target-areas/oxfordshires-ctas-to-download/

Ancient Woodland & Veteran Trees

Photo Credit: Louise Fox

Oxford is home to several areas of ancient woodland, including Brasenose Wood and at Shotover Country Park. Development must avoid loss or detrimental impacts on ancient woodland and veteran trees, which are considered irreplaceable habitats. In order for planning permission to be granted, the benefits of the development must clearly outweigh the loss, for example nationally important infrastructure projects.

Any losses in such cases must be mitigated for by the planting of trees within the site to ensure long term viable replacement habitat is created. It is recommended that any scheme with the potential to impact ancient woodland is discussed with the City Councils Ecology Officer at an early stage to ensure mitigation and compensation measures are satisfactory. As a general rule, it is expected that a habitat buffer zone at least 15 times larger than the diameter of a tree, or 5m from the edge of a canopy, if greater, will be provided as a minimum.

Oxford Swift City

Swifts are urban birds and a symbol of British summertime, returning to the UK from wintering in Africa. Every Spring the Common Swift returns to the UK to breed and raise their young, before leaving in August.

However Swifts have undergone significant declines, earning the species a place on the Amber List of Birds of Conservation Concern[1]. A number of factors have contributed to its decline, including lack of invertebrate prey, a changing climate and a reduction in the availability of suitable nesting sites.

Swifts rely on buildings for nesting and will often return to the same nest site each year, with some colonies being centuries old. The re-development and demolition of buildings, and loss of old nest sites means that Swifts need our help in finding a new home.

Oxford City Council partnered with the RSPB and a range of other environmental organisations on the two year, Heritage Lottery Funded project 'Oxford Swift City'. The project aim was to improve the prospects of Swifts in Oxford and to put in place measures that would help breeding Swifts within the City, while also improving public awareness of the species.

It is expected that artificial Swift roost sites will be incorporated into all suitable new developments in the City. A number of documents have been produced by the RSPB providing guidance and advice on how to help Swifts, (http://rspb.org.uk) and further details on giving Swifts a home can be found later within this document.

The project, led by the RSPB, also established a competition for the design of a 'Swift Tower' in University Parks.

Photo Credit: Colin Wilkinson and Ashutosh Jhureley

5. GUIDANCE FOR DEVELOPERS

Key Principles

It is important to consider biodiversity at the earliest possible stage of the development process, to ensure that the impacts of a scheme on biodiversity are fully considered, and also to ensure there are no unforeseen delays due to biodiversity impacts being missed. Overall biodiversity should be incorporated at design stage and considered an asset rather than a constraint, providing valuable spaces for people and wildlife within a high quality development.

It is recommended that applicants consider using the paid pre-application advice service available at Oxford City Council, to discuss their requirements to ensure all potential issues are considered, especially on major schemes. Such discussions can help outline the scope of surveys and assessments required.

Further details about the service can be found here: https://www.oxford.gov.uk/info/20066/planning_applications/331/get_pre-application_planning_advice

It is expected that all developers will provide details of how developments will follow two sets of complementary actions for conservation and enhancement of biodiversity.

1) Follow the Lawton principles: "more sites, that are bigger, better and joined-up"

To conserve and improve biodiversity, developers need to show how their proposals will:

- Retain ecologically valuable existing habitats and species, ideally in situ;
- Increase the diversity and area of habitats,
- Aim to increase the diversity of species, and their populations wherever possible,
- Improve their condition (for example through a change of management or by removing an existing cause of harm); and
- Make links using green corridors or "stepping stones" between them so that species can move more easily between sites and habitats.

2) Follow the "Mitigation Hierarchy"

The Mitigation Hierarchy is a decision making tool to ensure impacts on biodiversity are addressed by following a sequential approach. In terms of process, the City Council's expects that developers will:

- **Avoid:** Strive to avoid harming biodiversity as the first priority, e.g. by consideration of alternative locations and the least harmful location;
- **Minimise:** Where a less damaging location is not available, explain how harm to biodiversity will be minimised, e.g. by re-designing the development or limiting its operation in some way;
- **Restore**: If, despite mitigation, residual harm is likely and the need for the development in that place outweighs the damage likely to be caused, compensation will be expected.
- **Offset:** Where compensation is acceptable in principle and habitat is to be provided, the normal expectation is that it must be a larger area than that lost or damaged to allow for the inevitable level of uncertainty and time-lag inherent in any habitat creation, and in a location that will maintain or enhance the coherence of the ecological network.

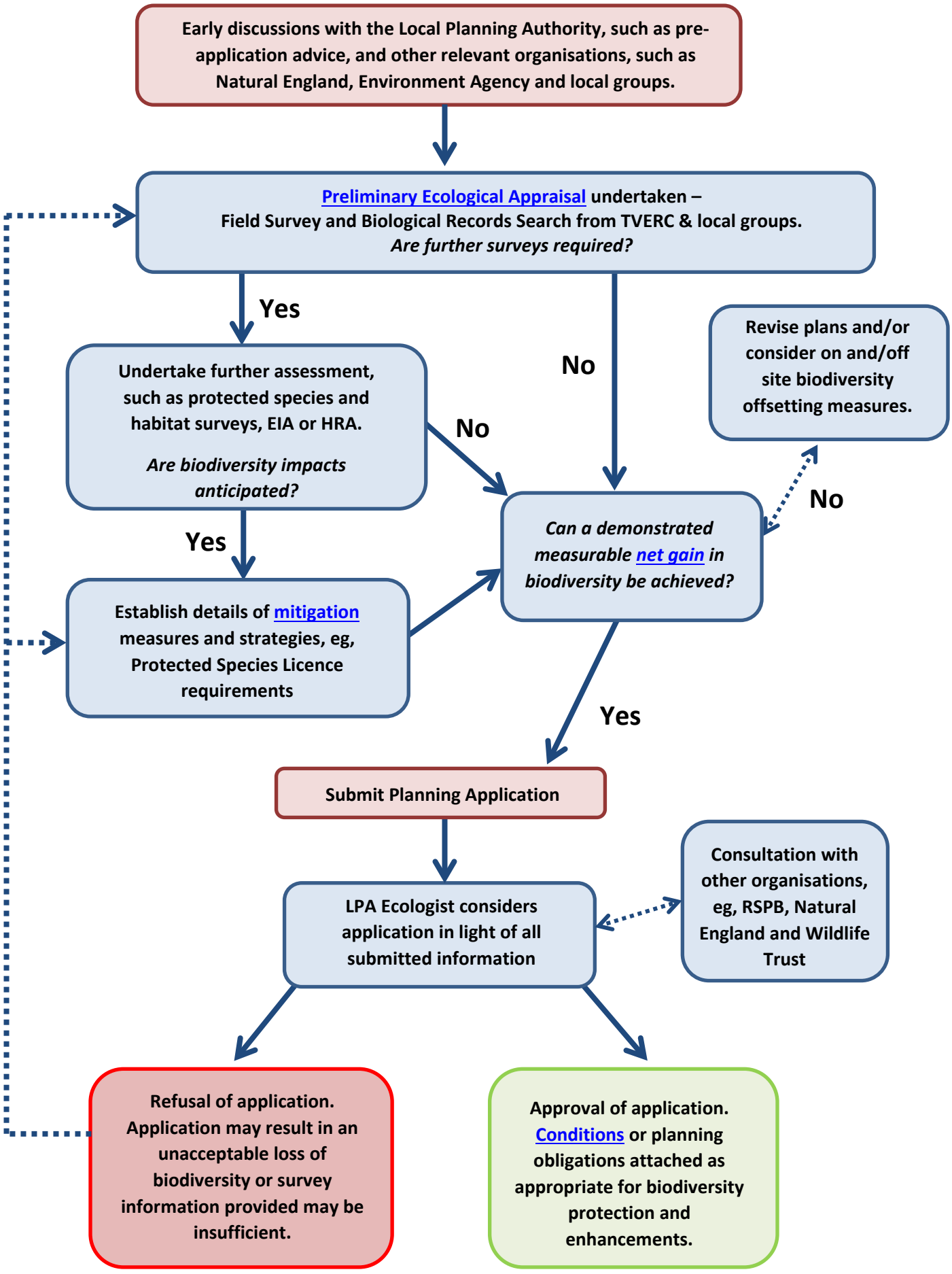
Applicants must provide sufficient information to demonstrate that the mitigation hierarchy has been followed and that accurate ecological survey information has been obtained. Otherwise there is a risk that the application will not be registered or possibly refused when considered against policy. Sufficient ecological information must be provided to confirm that biodiversity has been taken into account and measures considered, wherever possible, to reduce and/or compensate for harm. Details of ecological information required are provided later within this document and further information on what may be defined as mitigation or compensation, along with sound principles to follow when compensation is required, refer to guidance by the Chartered Institute of Ecology and Environmental Management (CIEEM).

The future maintenance and management of habitats that are identified as forms of mitigation or compensation must be assured through the provision of funded management plans. The City Council will consider the appropriate use of Section 106 obligations, Community Infrastructure Levy or financial endowments to achieve security for management in perpetuity (or the lifetime of the development).

Key Steps

The following flowchart provides an overview of the key stages which should be followed when submitting an application to ensure biodiversity is fully considered.

How Biodiversity is considered in the Planning Process



6. ECOLOGICAL SURVEYS AND EVALUATION OF IMPACTS

Adequate ecological survey information must be provided in support of any planning application and the results of ecological assessments should form part of the detailed design of site layouts and masterplans. The presence of protected species is a material consideration in the planning process and the NPPF requires that planning decisions are based upon up to date ecological information, undertaken to recognised professional standards.

Ecological Surveys

A Preliminary Ecological Appraisal (PEA) (often referred to as an Extended Phase 1 Habitat Survey) is normally the first stage in assessing a site for the actual presence of, or its potential to support, protected species or habitats and to evaluate other potential impacts of a proposed development, for example on nearby statutory or non-statutory designated sites.

The PEA should include a field survey and a desk study, with records obtained from the local environmental records centre (Thames Valley Environmental Records Centre). It is important that only high quality environmental data sets are obtained on protected species, which may assist in guiding the need for further assessment. It must be noted that desk studies based solely on information from the MAGIC website or NBN Gateway will not be accepted. The absence of species records must not be taken as confirmation of the absence of a species from the search area, as this may for example reflect local differences in recording effort.

Further species or habitat specific surveys will often be recommended within the PEA and it is important that all surveys are undertaken **prior** to submitting your planning application.

All ecological reports submitted as part of your application must address the following:

- What biodiversity features are present;
- What is the population likely to be affected;
- How biodiversity impacts can be avoided;
- If unavoidable, how can biodiversity impacts be mitigated;
- If mitigation is not possible, how can compensation measures be provided; and
- How will an overall net gain in biodiversity be achieved.

Ecological Advice

All ecological assessments must be undertaken by an appropriately qualified ecologist, a list of which can be found on the CIEEM website[5]. Reports should provide details of the ecologist undertaking the work, including professional membership and any relevant wildlife licences. Certain species can only be surveyed and handled by licenced personnel, therefore it is important that the ecologist is suitably qualified.

[5] http://events.cieem.net/ProfessionalDirectory/Professional-Directory.aspx

Wherever possible, it is recommended that ecological consultants with local knowledge are employed and a dialogue with the Oxford City Council Ecology Officer is opened at an early stage to ensure ecological assessments and subsequent mitigation are appropriate.

Survey Timings

Delays are commonly experienced where appropriate ecological surveys haven't been undertaken, or when seasonal constraints of species survey see applications submitted prematurely. Sufficient time must be factored into the development timetable to ensure the PEA and any subsequent surveys can be undertaken. Early engagement with an ecological consultant can greatly assist in programming surveys for a range of habitats and species.

It is important to remember that sites and biodiversity interest will change over time and therefore many ecological surveys will remain valid for no more than 2 years. When applying for European Protected Species licences survey information must be provided from the same survey year. Guidance on survey validity is available from CIEEM[6].

A number of survey calendars are readily available online and from your ecological consultant; a general example is also provided overleaf.

[6] https://cieem.net/resource/advice-note-on-the-lifespan-of-ecological-reports-and-surveys/

Survey Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Phase 1 Habitat Survey	Surveys Possible				Optimal Survey Period				Surveys Possible			
Botanical Assessment	Lower Plants Only				Detailed Botanical Surveys				Lower Plants Only			
Bats – Roost Assessment	Assessment Possible All Year											
Bats – Nocturnal Surveys	Hibernation Surveys			Some Activity Surveys	Optimal Survey Period				Some Activity Surveys		Hibernation Surveys	
Badgers	Surveys Possible All Year – Summer Vegetation Can Obscure Evidence						*Licensable Period for Disturbance*					Surveys
Dormouse	Gnawed Nut Search			Net Tube Surveys April to November. Gnawed Nut Search September to December.								
Great Crested Newt	Habitat Suitability Only		Pond survey from mid-March to mid-June				Habitat Suitability Surveys Only					
Reptiles	Habitat Suitability Only		Surveys Possible	Optimal Survey Period			Surveys Possible		Optimal Month	Surveys Possible	Habitat Suitability Only	
Otter	Surveys Possible All Year – Summer Vegetation Can Obscure Evidence											
Water Vole	Burrow Surveys	Habitat Suitability Surveys		Two Surveys Required – first April to June, second July to September						Habitat Suitability Only		Burrow Surveys
Breeding Birds	Surveys		Surveys x 4				No Surveys					
Wintering Birds	Surveys x 4		No Surveys								Surveys x 4	
White-clawed Crayfish	Habitat Suitability Only			Some Possible	No Surveys				Surveys		Habitat Suitability Only	
Invertebrates	Habitat Suitability Only			Some Possible	Surveys Will Vary Between Species					Habitat Suitability Only		

Optimal Survey Period
Surveys Possible (with some restrictions)
No Surveys. Habitat Suitability Assessment for Species Only

Habitat Regulations Assessment (HRA)

Under the terms of The Conservation of Habitats and Species Regulations 2017 (as amended), Oxford City Council is the "competent authority" for the purposes of making decisions about planning applications that are likely to affect the Oxford Meadows SAC. Where projects are (a) likely to have a significant effect on the SAC (either alone or in combination with other plans or projects), and (b) that project is not directly connected with or necessary to the management of that site, the City Council must carry out an "appropriate assessment" of the plan or project before making a decision.

Applicants for projects that may affect the SAC in any way, directly or indirectly, are strongly advised to approach the Council at the earliest stage and also to discuss their plans with Natural England. Impacts may be direct, such as habitat loss, or indirect such as changes to hydrological regimes, air quality or increased recreational pressure. Applicants will be required to provide information to enable the Council to determine whether an appropriate assessment is required.

Where projects affect Oxford Meadows SAC, the terms mitigation and compensation have very specific meanings. In these situations, particular care needs to be taken to make sure that mitigation is confined to those operating procedures that minimise impacts. The recent HRA case from the Court of Justice of the European Union (CJEU) known as 'People Over Wind' dated April 2018[7] details that contrary to previous case law, it may not be appropriate to use 'incorporated mitigation' in order to screen out likely significant effects at the screening stage of the HRA process. Mitigation measures are those intended to reduce impacts, described in People Over Wind as 'measures intended to avoid or reduce the harmful effects of the plan or project on that site'. Compensation, meanwhile, should be clearly identified as those measures that would have to be delivered to maintain coherence of the SAC, and compensation only becomes an option if it is determined that:

1) there would be an adverse effect on site integrity that could not be ruled out;
2) there were no alternative solutions; and that
3) there were imperative reasons of over-riding public interest.

Environmental Impact Assessment (EIA)

Some developments will meet the necessary criteria to require an EIA be undertaken under the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. If there is doubt over whether an EIA is required, it is recommended that the Local Planning Authority is consulted so that the application may be 'screened' to identify whether further assessment is required.

[7] People Over Wind and Sweetman v Coillte Teoranta (C-323/17)

7. BIODIVERSITY NET GAIN

Overview

Biodiversity net gain is where development leaves biodiversity in a better state than it was before. The concept of net gain has become embedded in national planning policy and is the foremost principle of the Government's 25-year Environment Plan. Paragraph 174(b) of the NPPF (2019) sets out that:

"To protect and enhance biodiversity and geodiversity, plans should:

…promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity."

All developments in Oxford which have the potential to result in negative impacts on biodiversity will be expected to demonstrate how an overall net gain will be achieved.

Calculating Net Loss and Net Gain

To demonstrate that there has been no net loss in biodiversity and that a measurable net gain will be achieved, it is useful to use a biodiversity impact metric or calculator. Such a tool works to quantify this change in biodiversity by using habitats as a proxy for biodiversity value.

The field of calculating net loss and gain is still developing, with ongoing updates to available metrics, however the prevailing DEFRA metric shall be used for all applicable applications. Other metrics, such as the now withdrawn TVERC metric, will not be accepted, therefore any queries should be raised in advance with the Ecology Officer.

The metric can be a useful tool in guiding decisions on how much compensatory habitat may be required for example, however this must be used in combination with ecological expertise. The metric doesn't take into account the needs of species, therefore a comprehensive understanding of biodiversity affected is required, based on all available data.

All metric calculations must be undertaken by suitably qualified and experienced ecologists, following a field survey of the site and any compensatory sites if required. A good understanding of habitat type and condition is required, along with skills in understanding creation and management of new habitats. Applicants will be expected to provide the metric calculations as part of their submission.

Compensating for Net Loss

When a net loss of biodiversity is anticipated as a result of a development, it will be necessary to provide compensatory habitat, either within the development site or off-site if this is not practicable.

Ideally it will be expected that compensatory habitat is provided within Oxford, close to the development. If this is not possible, the Oxford City Council Ecology Officer must be contacted for advice. All 'developer-led' offsetting schemes should be discussed with the Ecology Officer to ensure they are appropriate.

It will not always be necessary to re-create the same habitat type that is lost to development, therefore consideration must be given to providing the most appropriate habitat in the best place. For example, recreating grassland habitat lost between two otherwise isolated blocks of woodland may not provide the best opportunities for biodiversity, therefore consideration should be given to whether further woodland and hedgerow creation would be more appropriate.

8. SCHEME DESIGN

Following completion of ecological surveys, it is important that the results of assessments are incorporated into the scheme design. This approach is often simpler in the long run and more cost effective, reducing the need for the scheme to be redesigned at a later stage, or attempting to retro-fit in biodiversity as a last resort.

Overall the design of a scheme should seek to reflect the findings of the ecological assessment and in line with the requirements of the mitigation hierarchy, first an effort should be made to avoid impacts on biodiversity or for example, avoidance of harm to particular species or habitat features. Where avoidance is not possible, opportunities may be taken to enhance existing features, such as bolstering of existing hedgerows or eradication of non-native invasive plant species. Tools such as 'Opportunities and Constraints Plans' are valuable in guiding scheme design with nature in mind.

We encourage developers to consider biodiversity as an asset rather than a constraint. Ensuring access to nature is available as an intrinsic part of any new development can go hand in hand with ensuring net gains in biodiversity are achieved. Such development can provide a range of additional benefits, for example human mental and physical wellbeing, flood resilience, improvements in air quality and helping to mitigate the impacts of climate change. The benefits of providing access to nature and building with biodiversity in mind can leave a far-reaching and positive legacy.

Considerations for Landscape-scale Design

When designing larger scale developments, consideration should be given to the setting of the development within the wider landscape and the opportunities that this may present for habitat restoration and new habitat creation. A range of guidance is available to assist developers in such design, ensuring development takes into account existing and potential green infrastructure opportunities, existing habitats and what is appropriate in a local context.

The Oxfordshire Wildlife and Landscape Study (OWLS)[8] provides some guidance on the types of habitats present within Oxfordshire and where opportunities for enhancement may best be found. In addition, consideration of the aims and objectives of Conservation Target Areas will ensure targeted conservation action can have the greatest positive impact on habitats and species within Oxford and the wider landscape.

[8] http://owls.oxfordshire.gov.uk/wps/wcm/connect/occ/OWLS/Home/

9. PLANNING CONDITIONS

Most aspects of ecological assessment, mitigation and enhancement will be addressed during the application stage, through the detailed design of the development. However in some cases it will be necessary to secure further matters, such as delivery and working methods, through the use of planning conditions. Planning conditions can be used to mitigate any harm which could otherwise result in the refusal of an application, for example ensuring the development is undertaken in accordance with a species mitigation strategy. Conditions must be necessary, relevant to the development and also enforceable.

For the majority of developments, there may only be a small number of biodiversity related conditions and possibly an informative to remind developers that vegetation clearance should avoid the bird nesting season.

For more complex sites, there will likely be a requirement for more detailed assessment, such as a condition for a Construction Environmental Management Plan (CEMP), a Landscape Ecological Management Plan (LEMP), or perhaps a detailed lighting scheme to ensure no light-sensitive wildlife are harmed as a result of the development.

Protected Species Surveys and Planning Conditions

Protected species surveys will not normally be conditioned, neither for full or outline applications. The use of planning conditions to request ecological surveys after planning has been granted, will only be applied in exceptional circumstances, such as:

- Where ecological surveys may be out of date at the time of commencement of development, but where they were in date at the time of application.
- Where development is phased, therefore updated ecological surveys are required for later stages of the development.
- Where sufficient information has been provided such that additional information would not make a material difference to the decision maker, however further surveys will be required for example to secure a European Protected Species Mitigation licence.

It must be noted that conditioning surveys because the development timetable has not taken into account the seasonality of surveys will not be permitted.

10. WILDLIFE LICENCING

Where it is not possible to avoid impacts on protected species, it may be necessary to apply for a licence from Natural England in order for works to proceed. Case law, such as the Supreme Court case R (Vivienne Morge) v Hampshire County Council (2011) demonstrates that Local Planning Authorities need to fully take into account the likelihood of impacts on protected species in making planning decisions.

In doing so, the Local Planning Authority must be satisfied that the following 'Three Tests' will be met:

- The consented operation must be for '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';
- There must be no satisfactory alternative; and
- The authorised action 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'.

European Protected Species Licences

If you intend to undertake works which will impact a European Protected Species, such as bats or Great Crested Newt, you will likely require a European Protected Species Mitigation Licence (EPSML), obtained from Natural England, in order for the works to proceed.

Once planning permission has been granted, an application will need to be made to Natural England by a suitably experienced ecologist, which will include a method statement, details of all surveys undertaken and a scheme of mitigation. The City Council will apply a condition to the planning consent that a EPSML must be obtained prior to the commencement of works. While the precise details of mitigation will be agreed with Natural England, it is expected that a copy of the licence will be sent to the Council in order for this condition to be discharged. Once submitted, a traditional licence application will be processed in approximately 6 weeks.

A more recent development is the establishment of the Low Impact Class Licence (LICL), which is an additional option available where impacts are anticipated on some bat species or Great Crested Newt. Suitably experienced consultants may apply to register under the schemes, whereby developments with low risks are anticipated may be suitable for this approach. The LICL approach is a quicker, cheaper and more efficient way of dealing with developments that may have a low impact on certain protected species.

Other Protected Species Licences

Although not a European Protected Species, works which will impact upon Badgers or their setts, either directly or indirectly, must be undertaken under a development licence, also obtained from Natural England. Badgers are not a species of conservation concern, however are protected on welfare grounds, both animal and human.

Should it be necessary, for example, to close a sett, a licence application will need to be made for works to proceed. Exact details of mitigation will be agreed with Natural England, however this may include creation of a new sett prior to closure of the existing sett. Such licences may only be used

between 1st July and 30th November, to avoid affecting breeding and raising of young. Given the seasonal constraints which exist in respect of badger and the time required in some cases to build and establish new setts, it is important to consider this within the development timetable as soon as possible.

Under a new Class Licence process, highly skilled badger ecologists can now apply to register under this scheme. As with the LICL for bats and Great Crested Newt, this approach can often save time and reduce costs where certain criteria are met.

Great Crested Newt District Level Licencing

Oxford City Council is part of the District Level Licencing scheme for Great Crested Newt, which offers a system that provides developers with an alternative to traditional protected species licencing. The City Council has been granted a District Licence, meaning it can authorise actions in respect of Great Crested Newt, creating a simpler, more streamlined approach to licencing.

The scheme has been established and is administered by NatureSpace, set up in collaboration with a number of organisations, including The Amphibian and Reptile Conservation Trust, The Freshwater Habitats Trust, The Environment Bank and local authorities. In a shift from the traditional system, the scheme takes a more landscape scale approach rather than protection of individual animals at the site level. The survey work has already been undertaken and may in some cases provide developers with greater security at reduced costs.

The scheme is voluntary and developers can contact NatureSpace for advice on the likely impacts of their application. Costs to developers will be dependent on the location and scale of development.

Further details on the scheme can be found at https://naturespaceuk.com/

11. ECOLOGICAL MITIGATION

Mitigation measures are taken to avoid or reduce the risk of negative impacts on species or habitats. It will not always be necessary to obtain a licence for works to proceed and many mitigation options are available to applicants, which will vary greatly depending on the species and habitats found. Mitigation may be required not just on the development site, but also within the wider landscape, where indirect impacts may result.

Mitigation may simply involve careful location of working areas, timing of works to avoid harming sensitive wildlife or creation of wildlife buffer zones. Consideration must be given to immediate impacts, such as habitat clearance, and longer term effects, such as the loss of a foraging or breeding habitat. Full details of how these impacts have been considered will be expected.

Details of all potential mitigation measures are not provided within this document, however examples of common mitigation options are discussed below.

Ecological Clerk of Works (ECoW)

An ECoW essentially offers on-site ecological supervision, normally during the construction phase of a development. In most cases, the ECoW will ensure that attention is paid during construction works to ecological matters, especially where there is the potential for protected species to be present.

The presence of an ECoW on site may be a requirement of a planning condition, often delivered through a Construction Environmental Management Plan (CEMP). In many cases the ECoW will provide advice to site personnel on the potential presence of protected species, typically in the form of a 'toolbox talk'.

The ECoW may undertake the following tasks:

- Pre-construction checks of sensitive habitats for protected species;
- Implementing CEMPs and other ecological management plans;
- Providing training and advice to site personnel;
- Supervising works such as soil and vegetation removal or building demolition; and
- Implementing species translocations, such as reptile or amphibian destructive searches and relocation.

Species and Habitat Specific Mitigation Plans

A wide range of ecological mitigation strategies and plans may be established to prevent harm to protected species and habitats, both within the development and outside its boundary. Strategies may take the form of method statements to explain how the impacts from development will be minimised, for example avoidance of disturbance to an off-site Badger sett, or prevention of pollution events on a neighbouring watercourse.

For species where it is not necessary to obtain a licence in order for works to proceed, a mitigation strategy will provide the Local Planning Authority with clear details of how harm to species will be avoided. For example, reptile translocations do not typically require a licence, however details of

species affected, methods of capture and translocation and details of receptor habitat must be provided in order for the Local Planning Authority to be satisfied.

It is recommended that the use of mitigation strategies is discussed with the Ecology Officer at the earliest opportunity to ensure the approach is satisfactory and to avoid unnecessary delays.

Wild Birds and Development

All wild birds, their eggs and their young are protected by the Wildlife and Countryside Act 1981. It is an offence intentionally to take, injure or kill a wild bird or to destroy its nest while it is in use or being built. Where the Local Planning Authority is minded to grant planning permission but considers there is a significant risk that breeding birds are present and may be harmed as a result of the works, we may impose a condition specifying that works can only begin outside a defined period (generally, mid-March to end August) or until a qualified ecologist has made a thorough visual inspection of all likely nest sites and confirmed there are no nesting birds present.

Some bird species receive additional protection under Schedule 1 of the Act and are known to nest in Oxford City. These include Barn Owl, Peregrine Falcon *Falco peregrinus*, Red Kites *Milvus milvus*, Hobby *Falco subbuteo*, Kingfisher *Alcedo athis*, Cetti's Warbler *Cettia cetti* and Black Redstart *Phoenicurus ochruros*. It is an offence intentionally or recklessly to disturb a Schedule 1 bird while it is nest building or is in, on or near a nest with eggs or young, or to disturb their dependent young. Applicants are advised to seek ecological advice at an early stage about the likelihood that Schedule 1 birds may be nesting on or close to your site.

Vegetation clearance during the breeding season often leads to complaints from neighbours concerned about nesting birds. Any such complaints have to be referred to the police to investigate, so applicants are strongly advised to schedule vegetation clearance outside the period mid-March to the end of August.

12. ECOLOGICAL ENHANCEMENTS

There are so many options for enhancing biodiversity through development that this section of the TAN merely highlights a few of the more common and obvious scenarios. Generally, enhancements could involve one or a combination of the following:

- Enhancing existing habitat. (However, habitat management proposals cannot be counted as enhancement linked to development where habitat management is already a legal requirement on the landowner, e.g. to achieve favourable condition on a SSSI);
- Creating new habitat on land of low existing nature conservation value;
- Including features within the development targeted at specific species (e.g. by providing purpose-made nesting or roosting spaces for building-dependent birds and bats, by building an artificial Otter holt in a river bank, or similar).

Delivering Biodiversity Compensation and Enhancements

Consider how the long-term management of enhancement features will be achieved: enhancement schemes, both on and off-site, must be sustainable and realistically be capable of being managed for the benefit of wildlife. When designing schemes avoid over-complicated habitat creation which may not be feasible in the long term.

Respect and respond to the context of the site: choose options that extend and link habitats found around the site and improve green infrastructure connectivity. For example, planting a woodland between two blocks of semi-natural grassland, or vice-versa, may not be the most appropriate option.

Consider the scope for multi-functional features: for example, a cycle path could also provide a habitat corridor if it had a strip of semi-natural grassland and/or a hedgerow alongside it. Well-designed Sustainable Urban Drainage Systems (SUDS) may include swales and ponds that hold significant local biodiversity and also amenity for residents.

Give consideration to species choice in planting schemes: Seeds and plants should be from a Flora locale recognised source: see www.floralocale.org. While native planting of species of local provenance is encouraged, where ornamental planting is required give thought to species choice to benefit invertebrates. The Royal Horticultural Society 'Perfect for Pollinators'[9] lists provide excellent advice on planting with pollinating insects in mind.

Aim for simplicity, and scale: a larger area of one or two habitats is likely to be more valuable and easier to manage long-term than a complex mixture of small patches of many habitats (i.e. follow the "more, bigger, better and joined-up" Lawton principles described above).

Where appropriate, allow natural succession to take place: for example, from bare ground through grassland to scrub and young woodland – rather than aiming for a completely "finished" state from the beginning of the life of the development.

Consider how to accommodate the needs of individual species, especially where they are known to occur on or close to the development site. Priorities include breeding birds (especially birds of

[9] https://www.rhs.org.uk/science/conservation-biodiversity/wildlife/plants-for-pollinators

conservation concern), bats, hedgehogs, reptiles and amphibians, and pollinating insects. Further advice on design and enhancement for particular species is provided later within this document.

Artificial Nest / Roost Sites

Installing artificial nesting and roosting sites for birds and bats is good practice as part of any development and such provision will be expected unless there are good reasons why such features cannot be accommodated in the design. If you consider your proposals should be exempt for any reason, or if the building(s) involved are Listed or in a Conservation Area, seek advice from the Local Planning Authority at the earliest opportunity.

Other features, such as hedgehog homes or log piles can provide opportunities for a range of species, including small mammals, reptiles and amphibians. Further details are provided within the next section.

Table 1 below provides details of the expected box provision for building-dependent birds, bats and also for pollinators that are expected for various development types. Only nesting sites specifically designed for building-dependent birds (breeding Swifts, House Sparrows and House Martins) can be counted against the requirements of Table 1 because these species are declining in urban areas and rely heavily on buildings for nest sites. Boxes for smaller passerines, such as Robins and tits are still required as part of an overall mix of enhancements beyond what Table 1 expects.

Acceptable design solutions are possible for most buildings, including Listed Buildings and in Conservation Areas. Internal bricks and voids are less visually intrusive than external boxes. They are also more likely to be retained in the development long term Table 1 and require less maintenance.

Table 1: Expected provision of artificial features for different types of development

Type of development	Bird nest sites for building-dependent birds	Bat roost sites	Pollinator provision
Residential Housing	1 per house	1 per 5 houses	1 bug hotel per 5 houses plus 25% of soft landscaping designed to provide nectar sources
	1 per 2 flats	1 per 10 flats	1 bug hotel per 10 flats plus 25% of soft landscaping designed to provide nectar sources
All college and school buildings and student accommodation	1 per 250 m^2 floor space	1 per 500 m^2 floor space	1 bug hotel per 500m^2 floor space plus 25% of soft landscaping designed to provide nectar sources
Hotel	As student accommodation	As student accommodation	As student accommodation
Commercial / industrial / Other	1 per 1000m^2 floor space	1 per 2000m^2 floor space	1 bug hotel per 2000m^2 floor space plus 25% of soft landscaping designed to provide nectar sources

To ensure that net gain is achieved, the provision of sites outlined in Table 1 is in addition to any required to replace the loss of any existing features.

13. Enhancements for Species

Bats

New roost sites for bats are encouraged within many new developments, not only when roost sites are lost as part of a scheme. Such new features may include bat boxes in/on buildings or trees or for example creating bat lofts within new properties.

Roost sites and boxes must be as durable as possible and internal voids in buildings are preferred wherever practicable. In cases where external boxes are acceptable these should be of the kind made from a composite of wood or sawdust with concrete ('Woodcrete', 'Woodstone' 'WoodStone' trade marks) which provides good insulation but is light enough to install without difficulty, and much more durable than wooden boxes.

Bat boxes should be installed facing in a southerly direction in sheltered sunny spots, or several can be used to provide a range of conditions.

Roost sites incorporated into the fabric of a building stand less chance of being vandalised or accidentally removed in tree pruning for example. These boxes tend to suit certain types of bat, such as Common Pipistrelle.

In some circumstances it will be appropriate install some tree-mounted boxes to suit other species of bat, especially where development causes the loss of trees. It is also possible to provide more natural roost sites through tree "veterinisation" techniques, though ensuring continued public safety in urban environments must be the primary consideration.

Further information can be found here http://www.bats.org.uk/pages/bat_boxes.html

Building-dependent Birds

Wherever practicable it is important to try to retain existing nest sites, especially where minor works of renovation or refurbishment are being undertaken. Where any known nest sites are lost as a result of development, such losses must be compensated on a minimum 1:1 ratio basis. Boxes which closely compensate for those lost should be preferred, such as small hole boxes for the loss of a small passerine nest site.

Generally all bird boxes should be oriented in a north, east or west direction, where they are not exposed to prolonged summer sun to avoid overheating. Eaves and overhangs will provide shade, as will trees to a more limited extent.

Photo Credit: Colin Wilkinson

Swifts nest in internal voids high up within buildings, entered by a small hole which is often almost undetectable. Such nest sites may be artificially created in the form of a hollow 'Swift brick' built into a wall, an external box (pictured), or a hole drilled up through soffit boards into a void above.

House Martins build an external mud-cup nest under the eaves or a gabled roof peak. Building designs should incorporate a usable eaves overhang of at least 15cm and an un-polished surface finish to allow the nest to be securely attached. Artificial House Martin cups may help encourage nesting by this colonial species and may also be used by House Sparrows.

Swift bricks or boxes, and artificial House Martin cups should be placed at least 5m above ground level and therefore will not be suitable for some single-storey buildings. On a two or three-storey dwelling for example, just below eaves height or high up in the gable end is best. Avoid placing them where cats or squirrels may reach them.

When positioning the boxes, ensure there is a clear and unobstructed line of flight from the nest, ideally to a distance of at least 10m.

For swifts and house martins, ensure there is a clear and unobstructed flight-line straight out from the nest site entrance to a distance of at least 10m. Where possible, ensure that this will remain the case after the trees have reached maturity.

Photo: Example Sparrow Terrace by Schwegler

House Sparrows will nest in the same kinds of locations a Swift might use, including Swift bricks and external boxes. Bespoke Sparrow boxes or 'Sparrow Terraces' with a hole diameter of 32mm can also be used in buildings that Swifts are less likely to occupy, such as single-storey structures. House Sparrow boxes should be located at least 2m above ground level.

Swifts, House Martins and House Sparrows are all semi-colonial species, so take advantage of opportunities to loosely cluster several nest sites together on certain buildings and ideal elevations rather than an equalised, dispersed arrangement. For example, in a development of 20 two-storey homes, providing four nest sites on each one of the five most suitable buildings may be better than one nest site on each building.

There is now a wide range of commercial designs available of both bricks and boxes, and new bespoke solutions to particular projects are continually emerging. External faces of swift bricks can be painted or covered with material to match the building, as long as the entrance hole remains clear.

On some new buildings, rather than seeking to "hide" the nest sites, consider how you could use them to form a specific design feature (by the regular placement of nest holes within an otherwise bare rendered wall for example).

Where a building is genuinely unsuitable for internal swift bricks or external boxes, consider the scope to erect a free-standing swift or wildlife tower elsewhere on site. Numerous examples of swift bricks, boxes and towers can be viewed at http://actionforswifts.blogspot.com/.

Internal Swift bricks and House Martin cups need little maintenance. Swifts and House Sparrows do not create much mess at the nest site, however nesting House Martins are messier, so position artificial cups where droppings can fall straight to the ground (ideally, avoiding paths, window sills or lower roof surfaces below). External bird boxes require checking annually. Do this in early winter and renew or repair them if they are no longer watertight or securely attached.

Hedgehogs

Hedgehogs are a Species of Principle Importance and the species has experienced significant declines, with development acting as a potential constraint to movement. Since 2000, it is estimated that populations have decided by over a half.

Hedgehogs need to be able to move freely as they can cover several kilometres each night when feeding. Gardens enclosed by continuous boarded fences or boundary walls will prevent this therefore opportunities should be taken to provide 'hedgehog holes' in the form of 30cm gaps in fences or walls.

https://ptes.org/shop/hedgehog-highways-signs/hedgehog-highway-labels/

Small management changes can dramatically improve habitats for hedgehogs, especially in cities such as Oxford.

The Peoples Trust for Endangered Species (PTES) sell a small durable "hedgehog highway" sign that can be fixed above such gaps to encourage occupants of developments to leave them unblocked.

Any steep-sided water feature can be a trap and sides should be sloped or stepped to allow hedgehogs and other animals to climb out.

If space allows, providing log piles or hedgehog houses may be helpful and any garden or landscape planting with low-growing plants will provide cover and somewhere to forage.

Invertebrates

Photo Credit: Louise Fox

Pollinating insects are declining in numbers and distribution, with habitat loss contributing to this overall downward trend.

Developers are therefore encouraged to provide as much nectar-rich habitat as possible. In formal settings such as gardens these do not all need to be native species, as carefully chosen ornamental planting can also benefit invertebrates such as bees, butterflies and moths.

Night-flowering plant species should be encouraged, such as Night-flowering Jasmine *Cestrum nocturnum* or Evening Primrose *Oenothera biennis*, which also provide a rich invertebrate source for species such as bats. Additional measures including "bug hotels" may be used by solitary bees and other beneficial insects.

Bare ground and small sandy cliff-faces are also valuable invertebrate habitat, and particularly scarce outside quarries; some developments may offer the opportunity to incorporate such features, which is encouraged.

More frequently, it is usually possible to find space for dead wood habitat: sections or lengths of tree half-buried in the ground provides both invertebrate habitat and can be shaped to provide seating or a children's play feature. Many developments involve loss of trees that are of low quality for biodiversity and some of this material should be re-used as dead wood habitat where possible.

Dead wood and unwanted materials such as wooden pallets can provide important features for invertebrates, including saproxylic invertebrates such as Stag Beetle *Lucanus cervus*, as well as fungi for example. Habitat piles offer shelter and hibernation opportunities for species such as amphibians and reptiles.

Aquatic Species

Photo Credit: Louise Fox

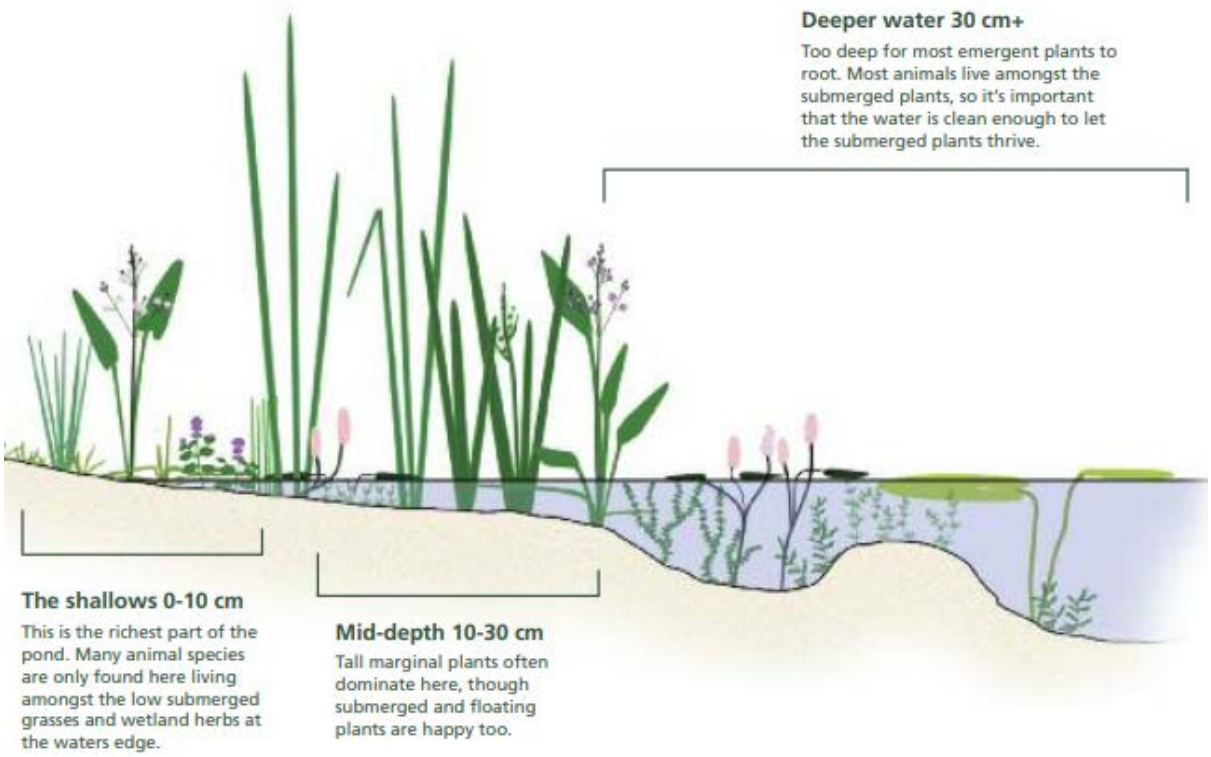
Ponds provide an excellent resource for a range of species, including amphibians, reptiles, small mammals and aquatic invertebrates.

Ponds, which are a Habitat of Principal Importance, can provide significant amenity and visual benefits to any development, while also serving a functional value in flood prevention.

Ponds can be incorporated as part of any Sustainable Urban Drainage (SUDs) system and can in many cases offer excellent biodiversity benefits.

Where ponds can be provided, ideally site them in the public realm rather than in private gardens and avoid stocking with fish or invasive plant species.

The Freshwater Habitats Trust has created a Pond Creation Toolkit which provides a number of factsheets to assist in pond design, species choice and management for the benefit of wildlife.



Designing Ponds for Wildlife. Freshwater Habitats Trust, Pond Creation Toolkit

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