

Built Structures

Introduction

London's wildlife depends not only on green spaces, but also on the artificial fabric of the city: houses and offices, factories and warehouses, bridges and car parks, wharfs and jetties, masts and chimneys. Indeed, some species are almost wholly confined to built structures, or spend a significant amount of their lives in, on or around them. Examples include bats, swift, house martin, jumping zebra-spider, London rocket, and maidenhair spleenwort. It is important that the management of existing buildings in London takes account of wildlife, and that new development is built with biodiversity in mind.

Although new development should avoid building on or damaging important sites or populations of species as a first principle, biodiversity can be incorporated into developments through wildlife-friendly landscaping, installation of sustainable drainage schemes, and features such as green walls, balconies and roofs, and nesting and roosting spaces. This is 'designing for biodiversity'.

Designing for biodiversity can, if undertaken in a planned manner, bring about benefits to wildlife. It can also offer developers the chance to secure planning approval more easily, engage the support of local communities, demonstrate corporate social and environmental responsibility, and achieve a unique selling point for the development. In many cases, there may be financial savings compared with a traditional landscaping approach. Users and occupiers of buildings can be provided with animated or diverse landscapes, and may benefit from the environmental benefits provided by SuDs, insulation, etc. Wildlife benefits from having features and habitats that are intentional rather than incidental.

Strategic frameworks

At a strategic level, there is now recognition, albeit limited, of the relevance of built structures to biodiversity conservation, and the potential they have for supporting biodiversity. The biodiversity strategy for England makes specific reference to the need to '*[incorporate more] biodiversity elements into green buildings*', and uses the 'green roofs for black redstarts' work in the capital as a case study. The Mayor's Biodiversity and Energy Strategies both encourage the installation of green roofs, walls etc. as part of good, sustainable design practice. The Energy Strategy (Proposal 15) '...requires planning applications referable to [the Mayor] to incorporate passive solar design, natural ventilation, bore hole cooling and vegetation on buildings where feasible. Boroughs should expect the same.'. This is backed up by London Plan Policy 4A.7.

Design for Biodiversity

Design for biodiversity should consider the ecological function of a built structure in its local context. This requires not only the consideration of how a built structure can minimise any adverse impact upon the local ecology, but also a

consideration of whether the built structure or its landscaped environment can deliver any wider ecological benefits or enhancements.

Planning policies (through PPG9) provide for the minimisation of damage to biodiversity by new development, through identifying important wildlife sites (such as the Sites of Importance for Nature Conservation) adopted in local Unitary Development Plans. Legislation (e.g. the Wildlife & Countryside Act 1981 (as amended)) provides the means to protect a range of species during the development and construction process (see the Generic Action Plan).

However, there is evidence that more work is required to assist developers, planners and construction workers to ensure development minimises its adverse impacts and maximises the benefits to biodiversity. Appropriate good practice processes, guidance and tailored advice have emerged within the past 10 years, with a particular focus on the development and construction sector, but more is required.

Supplementary Planning Guidance (SPG) is currently being prepared in a number of boroughs on sustainable and/or 'green' buildings. However, specific features to benefit biodiversity are often simply referred to, without further details. Comprehensive SPG is being prepared by the GLA to complement the Mayor's *London Plan* on sustainable design and construction, which is due for consultation in 2004.

The Partnership (through English Nature and the Greater London Authority) has worked with the London Development Agency to produce the *Design for Biodiversity* brochure, launched by the Mayor in February 2004. Accompanying this brochure is an internal toolkit for the LDA, which aims to help their land and property team take full account of biodiversity in their work. The Partnership is also maintaining contact with the *Building for Nature* project, an initiative being run by the South East of England Development Agency. This is working with house builders in preparing guidance and good practice case studies.

The Construction Industry Research & Information Association (CIRIA) has published *Biodiversity Indicators for Construction Projects*, as part of a suite of environmental indicators. CIRIA are now developing a similar project around buildings for biodiversity, with a number of partners on the steering group. This project will deliver the technical specification and guidance necessary to install vegetation on buildings for biodiversity, sustainable urban drainage and energy efficiency benefits. The Chartered Institute for Water and Environmental Management (CIWEM) are to publish a book *Habitats* in 2004 which features a specific chapter on buildings.

Boxes and other external features

At a simple level, nest and roosting boxes can be easily incorporated in or onto existing and new buildings. A wide range of boxes to benefit birds, bats and some invertebrates are now available, and for some species (e.g. peregrine falcon) a programme of installation is being undertaken by partners. There are also opportunities for incorporating artificial void structures (burrows) in walls and

embankments of civil engineering structures to benefit species such as sand martin and kingfisher. The viability and performance of bird and bat boxes is not known, although the latter is subject to current research by the Bat Conservation Trust. Guidance as to how best to use these to maximise biodiversity, however, is not readily available, and the opportunity exists to bring this together to benefit developers and planners in London.

London green roofs

London has a number of green roofs which have attracted particular attention. In certain conservation hotspots such as Deptford Creek (in respect of black redstart), local people have been working hard to establish innovative green roofs for biodiversity. The Laban Dance Centre, winner of the Stirling Prize for Architecture 2003, has an aggregate-based roof created for black redstarts from the building rubble on site. The Creekside Education Trust building has a similar roof and many other environmental features.

The substrate-based roof approach, developed in parallel to similar models in Switzerland (where strong research links have subsequently been made), has given impetus to looking at the biodiversity potential of green roofs across London and the UK. The Partnership has been influential in raising biodiversity as a crucial consideration for green roofs, and advocating the need for different approaches and systems that are currently available on the market. Most of these latter accord, at least in principle, to the German FLL guidelines, which do not specifically take biodiversity into account for either their design or on-going maintenance.

The value and potential of green roofs for biodiversity has only recently been recognised through recent research. Further work is currently being undertaken, as well as efforts to prepare specifications to ensure that green roofs maximise their potential for wildlife. Representatives of the Partnership have advocated these issues at a number of conferences, and have made links to manufacturers, developers, and researchers in the UK, Europe and North America, and other BAP partnerships in the UK.

Links with London Biodiversity Action Plans

London's priority habitats and species are influenced by built structures, and some depend on them for their existence. All plans should identify how, if possible, to incorporate a built structure element into the delivery of actions.

Some Habitat and Species Action Plans are particularly relevant: Tidal Thames, Wasteland, Chalk Grassland, Bats, Black Redstart, Sand Martin, House Sparrow, Grey Heron, Peregrine Falcon. For others, such as Woodland and Heathland, the opportunities and threats that may arise need to be acknowledged.

Objectives, Actions and Targets

Objective 1: To encourage developers, architects, designers, planners and others to design for biodiversity

Target: To hold a London green roof conference in 2004 and to produce technical specifications for designing buildings for biodiversity by 2005

Action	Target Date	Lead	Other Partners
1.1 Ensure that biodiversity conservation is central to the work of the GLA Architecture and Urbanism Unit's Living Roofs campaign	2004	Built Structures Working Group	AUU, GLA
1.2 Ensure that 'designing for biodiversity' is incorporated into the London Plan's Supplementary Planning Guidance on Sustainable Design and Construction	2004	Built Structures Working Group	GLA
1.3 Set up Green Roof Task Force for London to prepare and disseminate policy, and work with Government to make necessary changes to legislation	2004	Built Structures Working Group	AUU, GLA
1.4 Disseminate Design for Biodiversity (DfB) guide and tool-kit	2004	LDA	EN, GLA, Built Structures Working Group
1.5 Develop a suite of training events for developers, architects, designers and planners to follow up DfB launch	2004	BSWG	GLA, LDA Creekside Centre
1.6 Ensure that the Partnership's built structures issues are represented in a new green roof website for the UK	2004	Livingroofs.org	Built Structures Working Group
1.7 Organise green roof conference	2004	BSWG	Livingroofs.org GLA, LWT
1.8 Produce tool-kits for particular relevant audiences (planners, architects, landscape architects, and structural engineers) to provide technical specifications for green walls and roofs	2005	Built Structures Working Group	To be identified

Objective 2: Collate evidence on the biodiversity benefit of green roofs, walls and other approaches to designing for biodiversity

Target: To publish well-evidenced research report about the biodiversity benefits of green roofs by 2006

Action	Target Date	Lead	Other Partners
2.1 Work with CIRIA and other partners to collate and publish quantitative	2005	GLA	EN, LDA, Built Structures

evidence for costs and benefits of green roofs and walls, with technical specifications, for a range of audiences including development control officers			Working Group
2.2 Complete and disseminate PhD research on biodiversity performance of various roof substrates	2006	Black Redstart Lead	Royal Holloway College Built Structures Working Group

Objective 3: Promote the existing and potential biodiversity conservation value of built structures

Target: Ensure two 'biodiversity on buildings' events become part of annual programme of education and awareness raising campaigns

Action	Target Date	Lead	Other Partners
3.1 Organise annual "Birds on Buildings" event to generate records of breeding peregrine, sand martin, black redstart, house sparrow, swift, etc., and raise awareness of birds breeding on built structures	2004	EN	EN, BSWG, RSPB
3.2 Organise a 'Bugs on Buildings' event to raise awareness to green roof manufacturers and contractors, developers and architects, of the potential for habitat creation	2005	LWT	BSWG, Livingroofs.org, Creekside Centre, Buglife, LNHS
3.3 Organise a 'Plants on Buildings' event to raise awareness of contemporary research of roof plant performance and potential conservation opportunities	2006	LWT	BSWG, LNHS

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Abbreviations

AUU - Architecture & Urbanism Unit, GLA
EN - English Nature
GLA - Greater London Authority
LBBF - London Borough Biodiversity Forum
LDA - London Development Agency
LNHS - London Natural History Society
LWT - London Wildlife Trust
RSPB - Royal Society for the Protection of Birds

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