Eastside Biodiversity Strategy
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Prepared for Sustainable Eastside
by
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and
The University of Birmingham

Advantage West Midlands

ebns
East Birmingham North Solihull
Regeneration Zone

The Wildlife Trust for Birmingham and the Black Country

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EASTSIDE BIODIVERSITY STRATEGY

Executive Summary

The close proximity of nature to people is important for increasing the liveability of our cities by helping reduce the stresses of modern day living. Recent studies have shown that developments surrounded by high-quality natural environments attract higher rental and sale prices and have higher occupancy rates. Eastside, with its wealth of wildlife currently resident there, offers many opportunities for the creation of such developments and the purpose of this document is to offer guidance to architects, developers and planners in Eastside.

An order of priority, recommended by the Royal Town Planning Institute, aims to ensure best practice for the accommodation of biodiversity objectives. First enhance natural features, second avoid harm to them, third mitigate for them, and last, where unavoidable compensate for them. In addition to these guiding principles, the following targets have been set for Eastside informed by an audit of Eastside's biodiversity in 2004.

- **Plans for each development should be informed by an ecological survey for species and habitats known to be found in Eastside (see Eastside Biodiversity Audit 2004) carried out at the appropriate time.**
- **All new developments should, following guidance from a suitably experienced ecologist, score at least 100 'Green Points' per hectare.**
- **Each development should have wildlife friendly maintenance regimes supported by approved management plans and briefs.**
- **Areas of semi-mature woodland should be protected.**
- **Areas of bare/ephemeral ground may be lost in places provided they are replaced temporarily in others by early clearance of sites earmarked for development, and created permanently after development. The overall area of this habitat must be maintained.**
- **Green / brown roofs designed for biodiversity should be used to mitigate for areas of bare ground lost.**
- **Each new/renovated building should have at least one bird and one bat box.**
- **Each new/renovated building should make provision for the protection and enhancement of the black redstart.**
- **Each new/renovated building should make provision for the protection and enhancement of bat species.**
- **Each new building should make provision for the enhancement of insect species.**
- **Formal landscaping / planting should include native wildlife-friendly species and be maintained in a wildlife-friendly way.**
- **It will be a requirement of the Water Frameworks Directive that all heavily modified water bodies (e.g. River Rea) should be brought up to good ecological potential.**

1.0: STATUS AND PURPOSE OF THIS DOCUMENT

1.1 Close examination reveals that the Eastside Biodiversity Audit and resultant Eastside Biodiversity Strategy have a much wider context and importance than first inspection would suggest. Within Birmingham, the achievement of Sustainable Development, as required and described within Planning Policy Statement 1 Delivering Sustainable Development, must also bring about the conservation and improvement of the natural environment.

1.2 The Government has committed itself in PPS 1 to a planning system that will create sustainable communities and deliver sustainable development. It crucially recognises in paragraph 18 that 'the condition of our surroundings has a direct impact on the quality of life and that the conservation and improvement of the natural environment or the creation of it where it does not exist brings social and even economic benefits to local communities'.

1.3 In achieving Sustainable Development in Birmingham, the City Council must ensure that the natural heritage of Eastside is conserved and improved and importantly makes a significant contribution to regeneration and inward investment, and ultimately to the quality of life of those people who live, work and play within Eastside.

1.4 Given Eastside's location on the southern and eastern edge of Birmingham city centre who would have thought that the Eastside Biodiversity Audit (2004) would identify several priority habitats as defined in the Birmingham & Black Country Biodiversity Action Plan (2000); or, that it could be home to a range of specially protected or nationally scarce species of wildlife, ranging from the black redstart to several types of beetle. New development must be able to contribute to the continued protection, management and enhancement of these features and the creation and maintenance of a life-support network for them. This is an important test for the regeneration of this part of the city. This Strategy provides a framework and detailed advice so that this can be achieved.

1.5 It is aimed at all those, decision-makers and stakeholders, who will have an influence within the regeneration process taking place in Eastside. From the City Council's perspective, this includes both strategic and development control planners and land managers and also councillors. It is also aimed at land owners, developers and their agents, together with their own planners, architects, landscape professionals and consultants in order that they can be pro-active and seize opportunities before being asked or required. Finally, it is also aimed at those who live, work and play in Eastside so that they might be better able to appreciate the importance of the natural heritage of Eastside and take a stake and interest in its protection.

1.6 It is the intention of the authors to seek to secure Supplementary Planning Document status for the Eastside Biodiversity Strategy in a form appropriate as described within government planning guidance.

2.0: HISTORICAL BACKGROUND

2.1 The recent Biodiversity Audit of Eastside (October 2003-July 2004) has shown how important Eastside is to the biodiversity not only of the City Centre but also the City in general. It has also shown that the area's industrial past has made a major contribution to the creation of this biodiversity.

2.2 Eastside's industrial past resulted in the building of factories and warehouses, canals and canal wharves followed by the railway, viaducts, sidings and the Victorian railway 'folly' - The Duddeston Viaduct. These transport corridors, together with the River Rea, which runs through the centre of Eastside and links the other corridors, are today classed as Key Wildlife Corridors. It is these corridors, together with the buildings that surround them, that form the foundation on which the Eastside biodiversity has been able to flourish.

2.3 The decline in the traditional industries that were the backbone of this quarter provided a further platform for growth. This decline resulted in Eastside having within it many derelict industrial sites that have become the subject of ruderal recolonisation. Many of the old industrial buildings, often Victorian in origin, have deteriorated due to lack of structural maintenance. The appearance of gaps, crevices and holes, for example in roofs and brickwork, has created openings for bats and birds such as house sparrows, starlings and in particular black redstarts, to use as nesting and roosting sites. The need now is to ensure that the regeneration of Eastside does not bring about the degeneration of the quarter's unique natural biodiversity.

3.0: BIODIVERSITY FRAMEWORK

3.1 A Biodiversity Strategy for Eastside needs to consider the legal and nature conservation status of species present, the Birmingham & Black Country Biodiversity Action Plan (BBCBAP), the relevant policies and statements in the City's UDP, and the policies and statements within the Nature Conservation Strategy adopted as Supplementary Planning Guidance.

3.2 There are sites in Eastside that have the status of Site of Local Importance for Nature Conservation (SLINC) (River Rea and adjoining land, Digbeth Branch Canal). In addition, there are other sites or features that form links between sites with nature conservation interest, and support important wildlife habitats as identified in the BBCBAP. This network, together with features outside the network, assist in supporting a suite of protected and rare species, some of national conservation concern within Eastside. There are however, no sites in Eastside protected by statutory designations, such as National Nature Reserves, (NNRs) or Sites of Special Scientific Interest (SSSIs). There are also no Sites of Importance for Nature Conservation (SINCs).

3.3 Nature Conservation Strategy

The Nature Conservation Strategy adopted for the City as Supplementary Planning Guidance makes the distinction between Critical Natural Capital (CNC) and Constant Natural Assets (CNA). CNC includes SSSIs, SINCs and Local Nature Reserves (LNR), a variety of habitats such as ancient woodlands, lowland heath, wetland, improved acid grassland, and rare and protected species. None of these habitats occur to any great extent in Eastside but there are rare and protected species. CNA includes SLINCs and scrub, hedgerows, street trees, canals, rivers and streams, all present in Eastside. Elements of CNC and CNA are therefore present within Eastside.

3.4 One of the Sustainability Principles (5) in the Nature Conservation Strategy states that:

'Constant Natural Assets are less critical parts of the City's nature conservation resource. Even so they make an important overall contribution to local biodiversity, and people's experience of the natural world. Constant Natural Assets should be increased wherever possible, but may be subject to local changes. These may occur when losses can be compensated for by the creation of new resources of at least equal value. Where possible losses which cannot be replaced should be avoided.'

3.5 A strategy for Eastside needs to work within this and also within principles 2 and 3.

Principle 2 states:

'Action should be based on the precautionary principle where damage to wildlife or its habitat is both uncertain and likely to be significant.'

Principle 3 states:

'Consideration should be given to the ability of a particular habitat or ecosystem to continue to support particular species: i.e. proposed action must not allow critical levels of disturbance, damage or pollution to be exceeded.'

3.6 Policies 11, 12 and 14 of the Nature Conservation Strategy are also relevant, additionally to the strategy presented here. Also, any strategy needs to take account of relevant Biodiversity Action Plans and the legal and conservation status of individual species.

3.7 Birmingham & Black Country Biodiversity Action Plans (BBCBAPs)

Habitat action plans:

The following habitat action plans are relevant to Eastside:

Building/built environment
Canals
Gardens, allotments, parks and open space
Hedgerows
Lowland neutral and base-rich grasslands
Rivers and streams
Scrub and naturally regenerating woodland
Urban 'wasteland'
Veteran trees

3.8 Eastside Biodiversity Audit

An audit of Eastside's wildlife was carried out during 2003 and 2004. In 2003 a physical survey mapped the habitats present in Eastside, using Phase 1 habitat assessment techniques, and a desk study collated Eastside's historical biological records. The information gained from the preliminary investigation was used to target specific sites for further (Phase 2) ecological surveys. The Phase 2 surveys sampled the plants, invertebrates, birds and bats present in Eastside to give a baseline of the resident ecological communities, a summary of which is given in the appendix. The purpose of this biodiversity baseline is to inform choice of mitigation measures that need to be incorporated into the buildings and open spaces planned for Eastside. Buildings and open spaces can be easily designed to incorporate mitigation measures for species which are known to exist in the area, such as the black redstart. Another advantage of the baseline is that changes in ecological community structure (either +ve or –ve) can be assessed for the area following its development acting as indicator of Eastside's sustainability.

The survey revealed that Eastside is home to a wealth of wildlife including rare and protected species. Four rare species of plant have been found in Eastside in the past and could be re-introduced as part of the regeneration process. Nineteen of the bird species recorded in Eastside appear on the IUCN list of conservation concern as either red or amber species, and one, the black redstart, is given special legal protection due to its particularly small population in the UK. Mitigation for these species, in terms of nest sites and foraging habitat, will be vital for their continued survival and the resultant diversity of Eastside's bird population will be a good overall indicator of the ecological status of the area. Two species of bat have been recorded which, along with all other bat species, are protected by law. A bat survey should be carried out, by a suitably experienced batworker, wherever development takes place whether it involves complete/partial demolition or refurbishment of existing buildings. All developments within 200m of the canals or river should provide roosting opportunities for bats in the form of bat boxes or bricks and those adjacent to

the canals and rivers should consider bat lofts with entrances that open out onto the water. Many nationally and internationally rare species of insect have been recorded in Eastside. A diverse and abundant insect community is vital for the ecological health of the area. Many of the species found favour sparsely vegetated sites which are in the stages of early succession and the use of green/brown roofs designed for biodiversity will be important to mitigate for loss of habitat all over Eastside, but especially for developments which are built on wildlife-rich post-industrial sites. Full details of the survey results and recommendations for mitigation can be found in the Eastside Biodiversity Audit (2004).

4.0 PLANNING AND ENVIRONMENTAL POLICY CONTEXT

The Nature Conservation Strategy has identified Eastside as a key node – the confluence of four or more wildlife corridors. These corridors are the River Rea, the railway network and the canals. The value of corridors and links between sites has been recognised at many levels of scale, and has been encapsulated in a number of local, national and international guidelines. These planning and environmental policies provide a context for future development in Eastside.

4.1: National Policy Context

National Policy Guidance

PPS1 – Delivering Sustainable Development (2005) states that:

'a high level of protection should be given to most valued townscapes and landscapes, wildlife habitats and natural resources'

PPG 2 – Green Belt.

PPG 3 - Housing, March 2000 In particular paragraphs 2, 3, 11, 46, 52 to 56, 63 and ANNEX C Definitions-Previously-developed land.

The Planning Response to Climate Change: Advice on Better Practice. 2004.

Sustainable Development - a better quality of life - A Strategy for Sustainable Development for the UK, May 1999

Government Circular: **Biodiversity and Geological Conservation Statutory obligations and their impact within the planning system**, June 2005

PPS 9 - Biodiversity and Geological Conservation, September 2005 - uses the **EU Habitats Directive** to place an obligation to maintain and develop features essential for the migration, dispersal and genetic exchange of wild species.

PPG 17 - Planning for Open Space, Sport and Recreation, July 2002 in particular paragraphs 10, 14, 16, 17, 24 and Annex - Definitions, Open Space paragraphs 1 & 2

PPG 25 - Development and Flood Risk, July 2001, in particular Appendix E (recently updated)

England Biodiversity Strategy – Working with the Grain of Nature, DEFRA 2002

UK Biodiversity Action Plan

4.2: Regional and Local Policy Context

Regional Policy Guidance

RSS 11 - Regional Spatial Strategy for the West Midlands Region, June 2004. In particular, Chapter 7 Prosperity for All and Chapter 8 Quality of the Environment.

Regional Biodiversity Strategy. March 2005

Local Policy Guidance

The Birmingham Plan – incorporating alterations approved by Birmingham City Council for adoption, 11th October 2005, contains relevant policies in respect of the **Environment, Housing and Sustainable Drainage:**

The Built Environment (New Development) 3.14.

Canals 3.34, 3.35, 3.36.

Nature Conservation 3.37, 3.38, 3.40.

Green Belt 3.41, 3.44, 3.45 and 3.46

Open Space 3. 3.47, 3.48, 3.49, 3.50, 3.51, 3.52, 3.53, 3.54.

Birmingham's Nature Conservation Strategy – March 1997 refers to links and corridors frequently:

Section 3.4.13 states that it is important to maintain links between sites of quality to help species spread from one site to another and to sustain genetic variability

Section 3.4.15 emphasises the links between sites of quality and other open spaces

Section 3.4.16 stresses the benefits of links to urban fringe countryside

Section 3.4.17 recognises that features not normally thought of as corridors, such as hedgerows, verges, street trees etc., can function as corridors at a more local level

These concepts have been incorporated into **Policy no. 7:**

'the intrinsic value of any land or natural features having a corridor function, in terms of nature conservation and associated access and amenity, will be safeguarded wherever possible'

This policy will be implemented by bridging gaps and strengthening weak links in the open space network. In the context of Eastside the River Rea was designated a weak link and is therefore a priority.

The **Biodiversity Action Plan for Birmingham and the Black Country**, July 2000.

Birmingham City Council **Sustainability Strategy & Action Plan** 2000-2005

Mature Suburbs Residential Development Guidelines Interim Supplementary Planning Advice – February 2005

Places for Living, March 2001

Places for All, November 2001

Draft Eastside Design and Movement Framework

Sustainable Eastside a Vision for the Future

5.0: MISSED OPPORTUNITIES

5.1 While Eastside is still in the early stages of redevelopment, a significant amount of vital wildlife habitat has already been lost to development which is likely to have repercussions for wildlife, including the specially protected black redstart. The landscaped areas and trees that have been used to replace this lost habitat following development are largely useless for local wildlife in that they offer inadequate foraging, nesting and roosting opportunities. There is no evidence that the order of priority, recommended by the Royal Town Planning Institute, which aims to ensure best practice for the protection of biodiversity has been followed in any of the developments so far. Many opportunities for intelligent design that encourages local wildlife have been missed and the net effects of development so far have been to reduce habitat provision and diversity. All new and refurbished buildings should be designed to provide ample opportunities for nesting birds and roosting bats and include insect-rich habitat incorporated at ground, wall and roof-level. This is especially important for those developments which are adjacent to the canals and the River Rea, but the principle holds for all parts of Eastside.

5.2 The demolition of Masshouse Circus resulted in the loss of all of the original landscape planting. Much of this consisted of wildlife-friendly species, providing particularly good foraging habitat for house sparrows, which are present in Eastside and listed on the national Red List of Conservation Concern. Although adult house sparrows are seed eaters, they need invertebrate-rich habitats for the survival of their young. This habitat was destroyed at a critical time of year and, no compensation for the loss has been provided in the form of replacement habitat.

5.3 Opportunities for enhancing wildlife have been missed in the recently completed Bullring development, which contains no intentionally designed nesting or foraging habitats. If Eastside is to be regarded as a sustainable development then lessons need to be learned from the approach taken with the Bullring development. All new and refurbished buildings should be designed with biodiversity in mind with bird and bat boxes built into the fabric of the building and suitable foraging habitat and vegetation provided on walls and at ground or roof level.

5.4 Moor Street Station, despite being an important site for black redstarts, a legally protected species, has contributed little to wildlife. During the construction of the building's roof, nesting opportunities for these birds and also house sparrows could have easily been built into the cavities.

5.5 Millennium Point is the hub of the 'Learning Quarter' and is visited by hundreds of children every day. This building offered an opportunity to be an exemplar and set the standard for other developments to follow. While there are a number of nectar sources for insects, this site has little to offer in the way of habitat provision as opportunities to incorporate habitat features within the building or in the extensive adjacent car parking areas have not been exploited. Described as a catalyst for the development of Eastside, Millennium Point

represents a lost opportunity for local wildlife and a poor example for other developments to follow.

5.6 The car showroom development on Lawley Street is another lost opportunity. A derelict site which had been significantly re-colonised by nature, it was described in the Eastside Biodiversity Audit as a 'post-industrial site that contained a diverse range of habitats ranging from bare ground to short ephemeral/perennial to tall herb or fern and scrub.' It then adds that 'The clearance of this area represents a significant loss to the habitat of Eastside and measures should be taken to mitigate for this loss by provision of similar habitat types of similar areas.'

6.0: BUILDING FOR BIODIVERSITY – THE WAY FORWARD

6.1 To date, the effects of development on Eastside's biodiversity have not been beneficial, and opportunities to achieve biodiversity gains have not been meaningfully addressed. The importance of protecting biodiversity in urban areas has already been recognised locally by the Regional Biodiversity Strategy and the Birmingham Nature Conservation Strategy, and nationally by the Government's planning guidance: PPS9 'Biodiversity and Geological Conservation'; and PPS1 'Delivering Sustainable Development'. Importantly, PPS1 has made a commitment to:

'protecting and enhancing the quality of the natural environment in urban areas'.

6.2 It is clear that in order to deliver the Government's commitment and to ensure the protection of Eastside's unique biodiversity, a clear strategy is required that will result in the protection and enhancement of Eastside's biodiversity.

This strategy needs to address the following issues:

- compensation for the biodiversity that has already been lost;
- a means of protecting and enhancing the natural biodiversity that remains;
- a framework that will bring this about;
- a method of delivery & implementation.

6.3 The London Development Agency has identified five key steps, generic to all developments, which aim to achieve the above objectives. In order to comply with biodiversity legislation and achieve best practice developers should make the following provisions:

1) Consultation and scoping study. The first step is to consult the relevant statutory and non-statutory nature conservation organisations to obtain historical records for the site and inform the need for further species or habitat

surveys. Where this does not exist, or data are inadequate, it will be necessary for a trained ecologist to carry out a scoping study to identify ecological constraints and opportunities.

A useful source of information is the Eastside Biodiversity Audit (2004) which has identified the presence of rare and protected species for many sites in Eastside. Electronic copies are available from Sustainable Eastside.

2) Detailed surveys and impact assessment. Detailed surveys and impact assessment are required when the scoping study has identified that a site does or could support species, habitats or features of biodiversity value, or has the potential for ecological enhancement. Targeted and specific surveys should be carried out at the appropriate time by suitably qualified and experienced ecologists. Section 7.7 gives further guidance on the appropriate timing of surveys.

Developers should also be aware that to gather adequate survey data, often more than one survey will be required for a particular species or group and that results can only be interpreted with reference to the timing of the work, the method employed, the conditions at the time of survey and the time spent in any investigation.

3) Design of development to incorporate biodiversity objectives. The nature conservation opportunities and constraints should be identified at the outline design stage and worked into the masterplan for development. Even where little nature conservation interest has been identified, developers should aim to create features that will provide wildlife with an opportunity to colonise. Biodiversity objectives which are relevant and achievable should be submitted at the outline planning permission stage with the baseline ecological information collected for the site and the subsequent impact assessment. At the detailed design stage, detailed methodologies may need to be developed to satisfy planning conditions relating to biodiversity and these may need to be incorporated into the construction contract.

4) Enhancement, mitigation and compensation. The Royal Town Planning Institute recommends the following hierarchy of measures that should be taken to effectively accommodate biodiversity objectives and ensure good practice: i) enhance first; ii) avoid harm second; iii) mitigate third; and iv) last where there is no alternative, to compensate for biodiversity losses. This information is summarised below:

Objective (in order of priority)	Discussion
1. Retain, enhance or create features of nature conservation value and avoid harm	The design of all developments should look to incorporate and enhance the features of existing nature conservation value on, or adjacent to, a site. This should not only aim to incorporate those features (or species) which are protected by statute or through land-use planning mechanisms but also those which contribute generally to the biodiversity of an area.
2. Mitigate for impacts to features of nature conservation value	Mitigation should be considered where it is impossible to avoid all impacts to a feature of value, and also where impacts can be lessened through a change in the design or operation of a development.
3. Compensation for the loss of features of nature conservation value	Where there is no viable alternative, there should be conservation for the loss of a feature of nature conservation value. When considering compensation for habitat loss, the aim should always be to replace 'like for like' or better.

Source: Design for Biodiversity. London Development Agency.

5) Management and aftercare. Areas of nature conservation value that are to be retained, enhanced or created must be managed appropriately to ensure that they reach their full potential for wildlife and people. Ideally this should be the subject of a Biodiversity Management Plan and as its implementation is likely to be the contractor's responsibility, it should be considered by developers at the tender evaluation stage.

On smaller sites, the Biodiversity Management Plan can be incorporated into the landscape plan. A qualified and trained ecologist should be consulted to ensure that the plan contains adequate provision for monitoring to track the success of the biodiversity mitigations.

7.0: KEY TARGETS FOR BIODIVERSITY ENHANCEMENT

7.1 **Key considerations for Eastside.** While the previous section described the guiding principles for achieving best practice in development, this section describes specific ways that best practice can be achieved in Eastside. Guiding principles and targets specific to Eastside have been informed by the information collected in the Eastside Biodiversity Audit (2004) and from discussions between Eastside's stakeholders.

7.2 **Development provides opportunities for habitat creation and enhancement**: by utilising current open spaces; through the creation of new open spaces; and by allowing the evolution of short-term open spaces. Where such opportunities exist the choices made should complement the ecological context of the urban landscape and this should be an over-riding guiding principle during the regeneration of Eastside. In view of Eastside's post-

industrial legacy, a number of key considerations should be addressed to fulfil Eastside's nature conservation requirements:

7.3 **On sites where natural habitat and/or natural features are already present**, the site layout should be designed to ensure that there is maximum retention of these features.

7.4 **Bare ground should be managed to provide a continuity of habitat.** Areas awaiting development can replace those lost to development in the short term. In the long term these areas can be mitigated for by provision for this habitat type at ground level and green/brown roofs to replace the areas lost.

7.5 **Bare/ ephemeral/ short perennial/ tall herb/ fern habitats.** It should be recognised that areas of bare ground (often post-industrial sites) and ephemeral/short perennial and tall herb or fern communities are valuable habitats but that they are most vulnerable to development. Provision should be made for their continuance. This can be done by ensuring that sites scheduled for redevelopment are cleared well in advance of the commencement of work. This will allow these communities to evolve and act as sources for the colonisation of other sites. As with the overall aim in the Nature Conservation Strategy for the City, the minimum aim should be to retain current assets of 'dead' ground; ideally the aim should be to increase the number and geographical spread of such sites.

7.6 The following key targets are recommended if Eastside is to become an example of best practice for sustainable development.

7.7 **Plans for each development should be informed by an ecological survey for species and habitats known to be found in Eastside (see Eastside Biodiversity Audit 2004) carried out at the appropriate time.** The Eastside Biodiversity Audit carried out in 2004 revealed a wealth of plants, animals and habitats that are characteristic of urban areas. Like many similar areas, Eastside is home to protected and rare species important either locally or nationally. To achieve best practice it is important that an ecological assessment of the site is undertaken with the relevant ecological surveys (informed by the Eastside Biodiversity Audit, 2004) carried out at the appropriate time of year. The following table gives guidance on appropriate survey seasons for different ecological surveys:

Survey	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Scoping walkover	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Phase 1 habitat	⊗	⊗	⊗	✓	✓	✓	✓	✓	✓	⊗	⊗	⊗
Botanical	×	×	⊗	⊗	✓	✓	✓	⊗	⊗	×	×	×
Badgers	⊗	✓	✓	✓	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Wintering birds	✓	✓	✓	×	×	×	×	×	×	×	✓	✓
Breeding birds	×	×	✓	✓	✓	✓	×	×	×	×	×	×
Reptiles	×	×	×	✓	✓	⊗	⊗	⊗	⊗	×	×	×
Amphibians	×	×	✓	✓	✓	⊗	×	×	×	×	×	×
Invertebrates	×	×	✓	✓	✓	✓	✓	✓	✓	×	×	×
Water voles	⊗	⊗	✓	✓	⊗	⊗	⊗	⊗	✓	✓	⊗	⊗
Otters	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bats	×	×	⊗	⊗	✓	✓	✓	✓	⊗	⊗	×	×

✓ = optimal time for surveying (best practice) ⊗ = sub-optimal time for surveying × = unsuitable time of year for surveying

7.8 All new developments should, following guidance from a suitably experienced ecologist, score at least 100 'Green Points' per hectare

The Green Points System, devised by Essex County Council, is a scoring system whereby points are awarded for any measure that contributes to the bio-diversity within a development. The approach has been given the support of the Office of the Deputy Prime Minister and is likely to be adopted more widely as a result of this endorsement. Areas to be developed must reach a Green Points Score of at least 100 points per hectare. Achieving 100 Green Points per hectare can be achieved in a combination of ways and the designer, with the advice of a suitably experienced/qualified ecologist, can select the preferred mosaic of features that is relevant to the ecological features found in the surrounding landscape. The following table presents the range of options that are available to reach the full score.

Feature	Measure	Green Point Score
Provision of natural space; Enhancement of existing or creation of new protected species habitat; Enhancement of existing or creation of BAP species habitat; 'Dry gardens' – with plants requiring little water; Wetland areas – e.g. ponds, lakes, reedbeds (with native marginal planting) as part of SUDS	Per 10 m^2	1
Green roof	Per 10 m^2	0.3
Brown roof	Per 10 m^2	0.5
Bird boxes or other nesting provisions	Per box	0.2
Bat boxes or other nesting provisions	Per box	0.2
Walls covered with climbing plants	Per 10 m^2	1
Plants with good source of nectar, berries, seeds or nuts	Per plant	0.01
Native tree planting or retention of trees that are not protected by a TPO	Per tree	1

Source: 'Green Point System' Essex County Council (2005)

7.9 Each development should have wildlife friendly maintenance regimes supported by approved management plans and briefs. It will be necessary to consider future management of the site when planning habitat creation and maintenance. Natural habitats undergo natural succession and continue to evolve. This evolution can be an integral part of the planning process, but management may be required to aid this process. It is important to remember that ecological management of wildlife sites is often less costly than that for more formal sites.

Existing species poor areas need to review management plans to enhance wildlife biodiversity. This can be done by replanting with native, wildlife friendly species e.g. plants that provide nectar and berry sources, allowing wildflowers to set seed before mowing grassland, and reducing pesticide use.

Wildlife corridors (River Rea, Railway network, Grand Union Canal) must be maintained in their current form as they provide a source of species colonisation into other areas.

Woodland will need periodic thinning and coppicing.

Wildflower areas will need cutting once a year in late summer/autumn, possibly more in the early years, but should not be treated with fertilisers or pesticides. To maintain the low fertility levels favoured by wildflowers, grass cuttings should be collected and removed from site.

Maintenance of added features, such as bird and bat boxes by suitably qualified ecologists (e.g. licensed batworkers) will be needed, including cleaning out in winter.

Care should be taken to contain/remove invasive species such as Himalayan balsam, Japanese knotweed and giant hogweed.

7.10 Areas of semi-mature woodland should be protected. Woodland and scrub are valuable habitats and should be created wherever possible with native trees and shrubs. Woodland can be enhanced by coppicing or thinning to create more open spaces for woodland flowers and a more varied habitat for insects.

7.11 Areas of bare/ephemeral ground may be lost in places provided they are replaced temporarily in others by early clearance of sites earmarked for development, and created permanently after development. The overall area of this habitat must be maintained. Areas of bare/ephemeral ground may be lost in places provided they are replaced temporarily in others by early clearance of sites earmarked for development, and created permanently after development. The overall area of this habitat must be maintained

7.12 Green / brown roofs designed for biodiversity should be used to mitigate for areas of bare ground lost. Areas of bare/ephemeral ground are particularly vulnerable in Eastside. They can be managed in the short term by replacing developed areas with those scheduled for development, however in the long term if these areas cannot be left at ground level, green/brown roofs can compensate for their loss.

Not only are they significant for urban sustainability, Green/brown roofs can also be particularly beneficial to certain invertebrates, the declining house sparrow and also the protected black redstart (see www.blackredstarts.org.uk, and Sustainable Eastside: Advice Notice No. 1, Green Roofs - the facts and figures for further information).

7.13 Each new/renovated building should have at least one bird and one bat box. The incorporation of these small scale low cost features will help to encourage the breeding of birds and bats, and will also set a high standard for sustainable development in the city. Although these features will assist birds and bats in Eastside, it is by no means enough to provide roost/nest sites alone. See key targets below on individual species.

Bat bricks or tiles can provide roost sites in roof spaces especially on buildings near the canals or River Rea where bats feed.

Building design can provide suitable eaves and tiles for nest sites for bird species such as swifts, house martins and swallows.

Care should be taken that boxes provide for a variety of species throughout Eastside, and no single type of box is used throughout.

Management of these boxes should include cleaning out in winter.

7.14 Each new/renovated building should make provision for the protection and enhancement of the black redstart. Specific attention should be directed to the needs of the black redstart population. Black redstarts in England favour old industrial buildings, railway sidings, power stations, and gas works - anything that provides suitable cavities and ledges for nesting. They first bred locally at the University of Birmingham in 1943 and in the city centre in 1952. It is now thought that Birmingham and the Black Country holds between 5% and 10% of the national population.

Black redstarts are protected under Schedule 1 of The Wildlife and Countryside Act 1981. This means that it is an offence to disturb the birds or their nest sites during the breeding season. Local authorities are obliged to follow Planning Guidance PPG 9 with regard to mitigation for black redstarts. As noted earlier, they are on the Red Data List and have been identified as a Species of Conservation Concern in the UK Biodiversity Action Plan. They are also a biodiversity action plan species for Birmingham and the Black Country.

The railway corridor between Moor Street and Bordesley station is an important feeding area for black redstarts where they forage for small spiders and invertebrates. Black redstarts also use high points, rooftops, church spires etc., as song posts. This suggests that green/brown roofs on new buildings would help these birds.

It appears that black redstarts require a patchwork of foraging areas with a combined size of about a hectare. Many of the derelict sites in Eastside are too small to support a breeding pair. Also, suitable sites are too fragmented to provide a cohesive breeding territory. Some traditional black redstart sites in Eastside, such as Millennium Point, the Dunelm Building on New Bond Street and site 5 on Montague St. have been lost. The local breeding population may be a quarter of what it was fifteen years ago, whereas black redstarts appear to be expanding their range in Britain. A target in the BBCBAP of increasing the black redstart to reach about 20 breeding pairs appears unlikely given the current developments in Eastside. Habitat mitigation is essential if black redstarts are to survive in Eastside.

Survey – any building with features suitable for Black redstart nesting (buildings with accessible crannies or ledges) must have a survey carried out prior to any demolition or other work beginning, regardless of whether planning permission is required. This is to prevent unlawful damage to the bird, its nest or young.

Bird boxes – at least one bird box should be provided on each new and renovated building. -% of these should be designed for Black redstarts.

Areas of bare/ephemeral ground should be provided for at the planning stage to allow this bird's insect food source to flourish.

Green/brown roofs can provide valuable foraging ground

See section 9.0. Requirements for proposals affecting protected wildlife species for full information.

7.15 Each new/renovated building should make provision for the protection and enhancement of bat species. All bats in Britain are European protected species specifically protected by the EU Habitats Directive and also secondarily under Schedule 5 of the Wildlife and Countryside Act (1981). Thus it is an offence to intentionally kill, injure or take a bat; to intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a bat; or intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for that purpose. Developers may be subject to prosecution if they fail to observe all protective measures.

Any buildings or other structures that seem to provide suitable bat habitat need detailed survey before demolition or development is considered. The following criteria could be used to determine whether a building is likely to be used by bats:

Buildings with structural features that may provide a roost site for bats – this includes eaves, roof features or multiple roofs where bats may be able to roost, and dilapidated buildings where gaps in the brickwork, roofs or windows may provide an entrance for bats.

Old trees with a girth of 1.5m or more.

Buildings scheduled for demolition are often likely to contain bat roosts as they tend to be older dilapidated buildings. It is essential that, prior to demolition, bat surveys are carried out by qualified ecologists to determine the presence and type of roosts (e.g. winter/summer/temporary), and to ensure that timing of any works is such that no bats or roosts will be not be disturbed or destroyed.

Bat boxes/bricks – at least one bat box/brick should be provided on each new or renovated building. Most of these should be for Pipistrelle.

In Eastside, the canals and the River Rea are vital areas for foraging bats. Developments close to these areas must therefore retain much of their current features to remain viable as feeding grounds for bats and encourage bat roosting through the use of boxes and purpose-built roosts.

In the design stage, bat-friendly buildings must be created. Design should consider:

- timing of the work;
- whether exclusion of bats is really necessary;

- the types of roost present, i.e. maternity, summer, winter;
- the level of likely disturbance;
- not using harmful chemicals in any timber treatment;
- the maintenance of access to roost sites;
- the retention of known summer and winter roost sites and/or provision of alternatives.

See section 9.0. Requirements for proposals affecting protected wildlife species for full information.

7.16 Each new building should make provision for the enhancement of insect species. The insect population is vital to maintaining a variety of bird and bat species. A sustainable Eastside is not possible without a diverse insect population.

Areas of bare ground, ephemeral/short perennial vegetation and tall herb/fern communities provide diverse habitats for a healthy insect population and must be provided for.

New microhabitats can be created by creating small piles of sand/gravel, this is beneficial for certain rare groups of species.

Pesticides should not be used to protect insects and their food plants.

Existing shrubs with limited appeal to insects, can be replaced with those that provide nectar sources.

For butterflies, flower rich areas should be encouraged and amenity grasslands should be left un-mown to provide habitat for long grassland species.

7.17 Formal landscaping / planting should consist of native wildlife friendly species.

Species choice – formal landscaping should be avoided if at all possible. However if deemed necessary, only local native plant, tree, shrub and wildflower species, which are of greatest value for wildlife, should be used. Special consideration should be given to berry-bearing shrubs and plants attractive to butterflies and insects in general. Shade and density of foliage should be varied not uniform to provide a range of microhabitats for wildlife. For species lists suitable for Eastside please consult 'Eastside Planting Guide'

Rough grassland and shrub – creating areas of tall, rough grassland and planting suitable shrubs such as gorse will benefit species such as linnets and kestrels. Shrubs with winterberries provide food sources for birds throughout the winter.

Soil – it should be recognised that it is possible to create a variety of grassland types, i.e. calcareous, neutral and acidic all of which can occur in urban areas. Importing of topsoil onto the site is considered to be an unsustainable practice and so is discouraged. As well as reducing costs, many biodiversity objectives can be achieved by re-using the soil on a site. If the site des not have a well-developed layer of topsoil, subsoil can be used which, due to its low fertility, is an ideal growing medium for native grassland and wildflower species. Re-using the soil on a site also helps preserve its biodiversity as it will contain seeds, insects and micro-organisms that are adapted to the site conditions. No fertiliser should be used. However if the use of new topsoil is deemed desirable, attempts should be made to match material that is already on the site or there should be a conscious decision made to change the nature of the substrate.

Use of small spaces – although size of habitats has been stressed as determining habitat diversity, much can also be done to increase biodiversity by the creation of small-scale habitat features. Low-cost concepts such as native and/or ornamental wildlife friendly climbing plants against walls, trellis and fencing, hanging baskets and window boxes planted up with wildlife friendly species are good examples. Trees and shrubs, consisting of native and/or ornamental wildlife friendly species can be planted in courtyards and roof gardens using planters where necessary. The Eastside Biodiversity Audit stressed many times the importance of 'building' vegetation.

Amenity grassland – areas of amenity grassland should be left to grow long to encourage wildflowers to flourish. They should only be mown once per year in late summer/autumn after the flowers have set seed. Where areas of grass need to be kept short for human use, 1-2 meter strips of ground at edges and borders can still be left to grow long. Grass clippings should be removed from site, and no fertiliser used, as wildflower species prefer low nutrient sites. This form of management will not only cut costs but also reduce CO2 emissions.

Hedgerows – Eastside has very few hedgerows presently, but these should be considered as boundaries in planning new developments. Hedgerows, if composed of native shrubs and trees, are especially good habitats on their own, but have the added value of being able to link other habitats together.

Grassy banks – grassy banks planted with native wildflowers can form an attractive element of landscaping as well as attracting a range of butterflies and other insects. Such planting is especially suitable for steep slopes where management is more difficult or for areas where natural colonisation has not occurred.

7.18 Watercourses

All watercourses are important wildlife features and Eastside is fortunate enough to have stretches of canal and river, which help increase the biological diversity of the area. Urban watercourses are often heavily modified with hard banks and impermeable beds and those in Eastside are no exception. The Water Frameworks Directive now requires all heavily modified water bodies (e.g. River Rea) to be brought up to good ecological potential. No new rivers or canals can be created but measures can be adopted to improve channel and bank

habitat. Wetland creation along the canal corridors is possible and would be particularly beneficial to wildlife. Culverted watercourses should be uncovered wherever possible to allow better connectivity with bank-side habitat. Consideration should be given to the addition of ponds and wetland habitats in any development. The Environment Agency should always be consulted over the construction and modification of any water features.

8.0: INFORMATION REQUIRED WHEN SUBMITTING PLANNING APPLICATIONS

8.1 An application for development in the Eastside area should contain full information so that the Council is able to assess the following points:

Actions required	**Type of application**			
	Change of use	**Refurb**	**New Build**	**Demolition**
UDP Nature Conservation Policies relevant to application considered			✓	✓
Aims of BBCBAP and City's Nature Conservation Strategy should be furthered as far as possible		✓	✓	✓
Wildlife survey carried out to assess presence of rare, protected and BAP species on site – **if protected species are found 'Requirements for Proposals Affecting Protected Species' (below) must be followed**		☑	✓	✓
Potential **impact of work** on existing areas of wildlife interest considered		☑	✓	✓
Timing of work must not coincide with breeding/nesting times for protected species		☑	✓	✓
Sufficient measures to **protect existing areas of wildlife interest** on and close to the site during and after development	✓	☑	✓	✓
Sufficient **compensation** for any areas of unavoidable loss of wildlife interest areas provided for, either on or off site	✓	✓	✓	✓
Opportunities for **enhancing wildlife interest** be taken	✓	✓	✓	✓
Consideration given to linkages with sites of wildlife interest beyond the site		✓	✓	✓
Plan for **management of future wildlife interest** produced			✓	
Building design should include where appropriate, feature in accord with **urban sustainability** (green/brown roofs, bird & bat boxes, native & wildlife friendly planting schemes etc)		✓	✓	✓

☑ Denotes areas where action is necessary if proposed work will affect building exterior or roof, where various species of bird or bat may currently roost or nest, and where they may be able to roost or nest in the future if consideration is given to them during the planning stage.

9.0 REQUIREMENTS FOR PROPOSALS AFFECTING PROTECTED WILDLIFE SPECIES

9.1 The presence of three protected species in Eastside (the black redstart and two bat species) has serious implications in the planning process.

9.2 Where a legally protected species is recorded, reported or there is evidence to suggest its presence, the Council will require developers to carry out an appropriate appraisal of the effects of the development on the species' breeding, feeding, resting, hibernating requirements. This appraisal should comprise:

A records search – this can be achieved by consulting organisations likely to hold records such as:
English Nature
EcoRecord (the ecological database for the Black Country & Birmingham)
The Wildlife Trust for Birmingham & the Black Country
Birmingham City Council - Planning Ecologist
Birmingham City Council - Nature Conservation Officer
The Environment Agency
British Waterways (where canals are affected).

Ecological survey work – survey should be carried out at the appropriate time by suitably qualified/experienced surveyors and should include:
Breeding status
Location and requirements
Hibernation/roosting/resting sites
Feeding habitats and requirements
Commuting routes or regular routes of movement.

Ecological evaluation assessing the effect of any proposed development on the breeding, feeding, resting and hibernating habitat and on the population using the site. Off-site effects should also be considered.

Mitigation and/or compensation measures proposed.

The appraisal of the effects of development should address:

Accommodation of the species within the layout and design of the development

The timing of the work to avoid disturbance during the breeding season

The protection of the species and its habitat during the development process

Avoidance measures or ways of mitigating the effect of the development and compensating for loss of habitat

Opportunities for enhancement within the development such as the creation of new breeding or roosting sites

Consideration of the aims and objectives of relevant national and/or local Biodiversity Action Plans

How the site is to be managed after development to ensure the ongoing viability of the habitat and/or the features important to the species

Monitoring of the impacts of the development on the species – including what indicators will be used to monitor success during a post-development monitoring programme.

10.0 SOURCES OF FUTHER INFORMATION

Eastside Biodiversity Audit reports (November 2003 and July 2004)
Eastside Planting Guide (and other relevant Eastside publications)
Biodiversity Action Plan for Birmingham and the Black Country
Nature Conservation Strategy for Birmingham
www.blackredstarts.org.uk
www.livingroofs.org.uk
EN Bat Mitigation Guidelines

11.0 APPENDIX

11.1 Summary of the Biodiversity Audit of Eastside

Any nature conservation strategy needs to be based on a good knowledge of the wildlife habitats and biodiversity that exist on a site or in an area. This enables strategy recommendations to be made from a position of strength. The recent Biodiversity Audit for Eastside provides this.

Biodiversity and habitat types were assessed in three phases: a preliminary desk study, a Phase 1 Habitat Survey and a Phase 2 Habitat Survey. The results of these surveys are summarised here. A more detailed account of the Biodiversity Audit can be found in two reports: The Eastside Biodiversity Audit – Preliminary Report (Donovan et. al., 2003) and Biodiversity Audit of Eastside, Birmingham (Donovan et. al., 2004).

11.2 Protected, BAP and Rare species previously recorded in Eastside

The following species, with legal and conservation status, have been recorded previously in Eastside.

Species	Common Name	Protected	Concern	BAP	Bm Status
Plants					
Agrostemma githago	Corncockle		IUCN Extinct in wild		**R**
Buxus sempervirens	Box		IUCN near threatened		**R**
Centaurea cyanus	Cornflower		IUCN endangered		**R**
Hyacinthoides non-scripta	Bluebell	**WCA S8**		**BBC**	**C**
Birds					
Alcedo athis	Kingfisher	**WCA S1**	A		**U**
Anthus pratensis	Meadow pipit		A		**U**
Emberiza citrinella	Yellowhammer		R		**U**
Emberiza scoeniclus	Reed bunting		R		**U**
Falco peregrinus	Peregrine Falcon		A		**R**
Falco tinnunculus	Kestrel		A	**BBC**	**F**
Larus argentatus	Herring Gull		A		**U**
Larus fuscus	Lesser Black-backed Gull		A		**U**
Larus ridibundus	Black-headed Gull		A		**F**
Motacilla cinerea	Grey wagtail		A		**F**
Passer domesticus	House sparrow		R		**C**
Passer montanus	Tree sparrow		R		**U**
Phoenicurus ochruros	Black redstart	**WCA S1**	A **RDB3 (rare)**	**BBC**	**U**
Picus viridis	Green Woodpecker		A		**U**
Prunella modularis	Dunnock		A		**C**
Pyrrhula pyrrhula	Bullfinch		R	**UK**	**F**
Regulus regulus	Goldcrest		A		**F**
Sturnus vulgaris	Starling		R		**C**
Turdus philomelos	Song thrush		R	**UK BBC**	**F**
Bats					
Pipistrellus pipistrellus	Common pipistrelle	**EHD WCA S5**		**UK BBC**	**F**
	Natterer's	EHD **WCA S5**		**UK BBC**	**VR**
Amphibians					
Rana temporaria	Common frog			**BBC**	**VC**

Notes on species status table – the definitions of the abbreviations are given below.

PROTECTED

- WCA S1 = Wildlife & Countryside Act Schedule 1 (birds protected at all times)
- WCA S5 = Wildlife & Countryside Act Schedule 5 (animals with various levels of protection)
- WCA S8 = Wildlife & Countryside Act Schedule 8 (higher and lower plants with various levels of protection)
- EHD = European Habitats Directive (plus the relevant Annexe II or IV)

CONCERN (SPECIES OF CONSERVATION CONCERN)

- **Birds**
  Species of Conservation Concern 2002 – 2007 R = Red List A = Amber List

  Red List species are those that are Globally Threatened according to the International Union for Nature Conservation criteria; those whose population or range has declined rapidly in recent years; and those that have declined historically and not shown a substantial recent recovery.

  Amber List species are those with an unfavourable conservation status in Europe; those whose population or range has declined moderately in recent years; those whose population has declined historically but made a substantial recent recovery; rare breeders; and those with internationally important or localised populations.

- **Mammals**
  ND National Decline and ED England Decline as measured by the Mammal Society, Table of Recent Population Changes in the Native Species of Land Mammals.

- **Invertebrates**
  RDB3 Rare = Identified in Red Data Book.
  Species with small populations, not RDB1 or RDB2, but are at risk. Species that are estimated to exist in fewer than 15 10km squares.

  Na Scarce = Nationally notable A scarce. Species that do not fall within RDB categories but which are uncommon and thought to occur in 30 or fewer 10km squares.

  Nb Scarce = Nationally notable B scarce. Species that do not fall within RDB or Na categories but are uncommon and thought to occur within 31–100 10km squares.

  Butterflies RD = Regional Decline identified in Butterfly Conservation West Midlands Regional Action Plan.

BIODIVERSITY ACTION PLAN (BAP)

- UK = Species possesses a national Biodiversity Action Plan
- BBC = Species possesses a Birmingham & Black Country Biodiversity Action Plan

BIRMINGHAM & BLACK COUNTRY STATUS AND BIRMINGHAM STATUS (BBC STATUS AND BM STATUS)

- U = Uncommon, a species present in 4.3% - 12% of 1Km squares, tetrads or 5Km squares
- R = Rare, a species present in 1.0% - 4.3% of 1Km squares, tetrads, or 5Km squares
- VR = Very Rare, a species present in less than 1.0% of 1Km squares, tetrads, or 5Km squares

11.2 Phase 1 Habitat Survey

Eastside represents a microcosm of habitats typical of a well-established inner city industrial area in the throes of redevelopment. Industrial buildings can be valuable breeding, roosting and feeding habitats for bird species such as kestrel, house sparrow, starling, pied wagtail and, especially in this area, black redstart. They also provide habitats for bats and many buildings possess 'building vegetation', useful as feeding and roosting sites.

Apart from the built environment, 24 habitat types were identified, arranged in a series of patches and linear features or corridors. The River Rea, Grand Union Canal and rail lines emanating from Moor Street Station provide the main corridors. Introduced shrubs dominate the area. Also of significance are areas of tall ruderal and ephemeral/short perennial habitats typical of post-industrial sites. Patches of dense or scattered scrub are common. London Plane (Platanus x hispanica) is the most commonly planted introduced species in Eastside although small areas of broad-leaved woodland also exist and are composed of silver birch, rowan (Sorbus aucuparia), ash and English oak. Bracken (Pteridium aquilinum) occurs in small patches across the area but is mostly associated with railway and canal side habitats. Japanese knotweed (Fallopia japonica) is also associated with the linear corridors.

11.3 Phase 2 Habitat Survey

Eleven Phase 2 sites were chosen to reflect the range of the habitat types identified in Phase 1. As can be seen from the maps in the Eastside Biodiversity Audit, there are a number of other sites with similar characteristics within Eastside.

Site	Habitat characteristics
1. Ashted Circus	Amenity grassland with shrub beds and specimen trees
2. Jennens Road / Lawley Middleway	Post-industrial site with ephemeral/short perennial, tall ruderal, scrub, bare ground and spoil heaps.
3. Millennium Point	Two areas of recently planted shrubs and amenity grassland
4. Curzon St. canal entrance	Mostly amenity grassland and introduced shrub with a small area of neutral grassland
5. Montague Street	Post-industrial site with habitats ranging from bare ground and short ephemeral/perennial to tall herb or fern and scrub.
6. Digbeth Branch canal	The only area of semi-mature woodland in the area. More open areas contain scrub, tall herb or fern and planted shrub habitats.
7. River Rea / Grand Union	Intersection of canal and River Rea - mainly grassland and scrub woodland with areas of bracken and tall herb.
8. Disused Duddeston	Access denied but surveyed from ground viaduct level; appeared to be mainly scrub woodland.
9. New Bond Street	Post-industrial site with ephemeral/short perennial, tall ruderal, bare ground and spoil heaps.
10. Shaw's Passage	Post-industrial site almost entirely composed of *Buddleia davidii*.
11. Park Street Gardens	Amenity grassland with introduced shrub beds and scattered mature trees.

Shading denotes sites not surveyed due to restricted or denied access and development commencement

11.4 Surveys were undertaken between April 1st and June 6th 2004. This timing was not ideal and some species will have undoubtedly been missed, hence the value of EcoRecord, the ecological database for the Black Country and Birmingham, for filling in some of the gaps. It is recommended that the following species analysis be regarded as incomplete and that additional surveys will be required as development progresses. Site 5 unfortunately was destroyed before the main survey period and sites 8 and 10 were largely inaccessible. The analysis presented here essentially ignores those sites.

11.5 The numbers of main species recorded are listed below. As can be seen, some sites are relatively rich in biodiversity across the range of species surveyed. Sites 2 and 7 possessed the highest number of beetles and fly species and also a high number of plant species. Site 7 possessed one of the highest numbers of bird species but site 2 had relatively few species. The site with the highest number of plant species was 9, which also had the highest number of bird species but the beetles and spider numbers were comparatively low. This shows that biodiversity richness is a complex issue and it will not be possible to make blanket statements and decisions affecting the entire range of habitats. Also, this approach does not consider specific 'rare species' that demand specific habitats which might appear poor in general biodiversity. Thus, it is necessary to examine habitats and species separately as well as the way they interact.

Sites	Plants	Beetles & spiders	Other insects	Birds	Total
1 Ashted Circus	48	19	52	14	133
2 Jennens Rd./Lawley Middleway	89	33	105	9	236
3 Millennium Point	23	6	28	11	68
4 Curzon St. Canal Entrance	55	21	59	4	139
6 Digbeth Branch Canal	51	15	90	21	167
7 River Rea/Grand Union Canal	106	39	102	20	269
9 New Bond St.	133	20	85	22	260
11 Park St. Gardens	42	12	11	13	78

11.6 Plants

A total of 312 plant species were recorded. Post-industrial sites with a mixture of habitats (e.g. sites 2 and 9) were most species rich, along with the canal corridor (site 7). More formal sites (1, 3, 11) were species poor. No red data species or native species requiring protection were found. Most of the species are typically urban.

Site 2 possessed an interesting variety with a range of garden escapes and edible species. Site 4, Curzon Street canal entrance, was generally species poor but contained a large population of common whitlowgrass (*Erophila verna*) in the brickwork. Canal sites 6 and 7 had species typical of canals within Birmingham and the Black Country. Tall rocket (*Sisymbrium altissimum*), which appears to be decreasing in the West Midlands, was present in good quantity at one small area. The built-up bank of the River Rea possessed a mixture of planted shrubs, garden escapes and native species.

Also present were the undesirable giant hogweed (*Heracleum mantegazzianum*), Himalayan balsam (*Impatiens glandulifera*) and Japanese knotweed (*Fallopia japonica*). This indicates that corridors can act as conduits for invasive species as wells as helping to spread biodiversity. This needs consideration in the management processes.

11.7 Ground Beetles and Spiders

103 species from 31 families were recorded. Sites 2 and 7 were most species rich with sites 3 and 11 least species rich. The other sites possessed an intermediate diversity. Sites 7 and 9 were more important for the 'rare' species. Thus, sites 2, 7 and 9 were the important sites. These sites were larger, with a greater diversity of habitat types. One of these, site 7, is a corridor site. In relation to sites 2 and 9, diversity of habitat types is perhaps more important than proximity to corridor. These results indicate that the greater the habitat diversity and the larger the site size, the greater the chance of Araneae/Coleoptera colonising the site.

Five of the beetle species have nationally scarce (Na/Nb) status – *Platyderus ruficollis* (Nb, sites 7 and 9), *Meligethes fulvipes* (Nb, site 7), *Adonia variegata* (Nb, site 9), *Longitarsus parvulus* (Na, site 11) and *Glocianus punctiger* (Nb, sites 2 and 9). None of the spider species had conservation status.

11.8 True Flies, Bugs, Galling Invertebrates and Aculeate Hymenoptera

A total of 334 species from 101 families were identified. As with previous species types, sites 2, 7 and 9 were richest (67% of species). However, the other sites were more diverse than expected, especially site 6 (a canal corridor). The evidence suggests that a network of sub-sites exists each contributing to biodiversity in small but distinctive ways and enhancing Eastside's role in supporting the biodiversity of adjoining areas and vice versa.

Four species with Nationally scarce Nb status were found; *Phyllotreta cruciferae* (site 9), *Aulogastromyia anisodactyla* (site 1), *Lonchaea palposa* (site 11) and *Hylaeus signatus* (site 6).

11.9 Butterflies and Moths

The butterfly survey was limited by timing and weather conditions so the following is a discussion of what might be expected based on surveys and observations in similar areas elsewhere in the conurbation. It does mean that a more complete survey of butterflies and moths is needed in Eastside. There are a number of ubiquitous species which may be found in almost any habitat, that are present in Eastside and urban areas in general.

Sites 2, 7 and 9 appear most suitable for a range of butterfly species. They are relatively large, open and contain a variety of plant species, many of which are larval food plants and nectar sources. Small trees and shrubs, such as willow, bramble, and Buddleia would also attract species. Other sites are smaller, dominated by mown amenity grassland, and would attract a more limited range of species.

The moth survey only examined sites 2 and 9 as these contained a variety of habitat types. Site 2 was most species rich with 22 species compared to the 12 species for site 9. Although no conservation status species were found it is likely that the BAP species wormwood shark (*Cuculia absinthi*) will occur at these two sites because of the presence of the larval food plants wormwood (*Artemisia absinthum*) and mugwort (*Artemisia vulgaris*).

11.10 Birds

Thirty-seven species of birds were recorded. The timing of the survey meant only residents, summer visitors or the occasional migrant would have been recorded. Winter visitors and autumn passage migrants will have been missed, hence the importance of EcoRecord in filling some of the gaps. However, the survey has shown that Eastside supports a wide variety of bird species. Of the 37 species, the Black Redstart (*Phoenicurus ochruros*) is specifically protected by Schedule 1 of the Wildlife & Countryside Act (1981) and is also on the Red Data Register. Four other species are on the Red List Conservation Concern, and six are on the Amber List of Conservation Concern. Thus, a quarter of the birds found in Eastside are either Red or Amber List species.

The diversity of bird life depends on suitable nest sites and feeding and foraging sites. Some species, such as house sparrow, starling, kestrel and especially black redstart tend to nest in or on buildings. Such nest sites have been declining rapidly in areas such as Eastside, where regeneration has proceeded apace without taking their needs into account. Old and derelict buildings provide useful sites; new and redeveloped buildings much less so. Providing nest boxes and other structures in buildings close to open spaces, and along canal, railway or river corridors where food sources (i.e. insects, seeds and small mammals) are more abundant, can rectify this.

Intensely designed and managed areas, such as amenity grassland and ornamental shrubs, may support blackbird (*Turdus merula*), greenfinch (*Carduelis chloris*) and blue tit (*Parus caeruleus*) but little else. The semi-derelict post-industrial sites and canal, river and railway corridors support the richest bird populations. Such areas contain plant species that are allowed to flower and seed, have large insect populations and are subject to very little disturbance. Such sites are vitally important in Eastside, as they are species reservoirs or sources for dispersal to other areas. Without these areas the avian fauna of Eastside would be extremely poor.

Sites 6, 7 and 9 are almost equally diverse in terms of number of species. Site 7 held 3 species of warblers; a function of the mosaic of scrub, bramble, thick bushes and trees on a spoil mound. Grey wagtails were seen along the River Rea at site 7. All three sites possess a variety of habitats as outlined in Table 1.

11.11 Bats

Within the survey time it was not possible to identify roost sites. Common pipistrelle (*Pipistrellus pipistrellus*) was recorded foraging consistently over the Grand Union canal, Digbeth Branch canal and the River Rea. A *Myotis* species was also recorded but the actual species was not identifiable. These areas may be the only areas capable of providing sufficient invertebrate prey. Lack of bats around buildings and roads was thought to be due to the lack of vegetation or trees that can support invertebrates.

Eastside would appear to present many opportunities for roosting bats and some foraging resource over and near the watercourses. Further survey work will be needed to substantiate this and before any development can take place to ensure compliance with protected species legislation.

11.12 ECOLOGICAL THEORY

11.13 Sources and Sinks

The wide range of habitats in Eastside can be divided into ‘sources’ and ‘sinks’. Sources are areas of habitat that produce a surplus of offspring, which may be capable of spreading and colonising other areas. Sinks are areas of habitat that produce a deficit of offspring and whose population would become extinct were it not for colonisation by species from other sources. The connectivity between sources and sinks is therefore crucial.

11.14 Corridors

The connectivity between sources and sinks is crucial to aid dispersal and colonisation and avoid extinctions. Corridors connect spatially distinct habitats and allow the complex of connected populations to exist. Corridors may also themselves be sources or sinks.

11.15 Colonisation

Some species may only survive if they are able to colonise new habitats that meet their requirements. Post–industrial site are important in this respect as they begin species poor, but evolve and enable other species to colonise from sites that are being redeveloped. Early clearance of industrial sites before redevelopment will allow more time for these sites to evolve and act as sources for other habitats and sites. This is an important consideration for developers when planning the timing of works.

11.16 Mosaics

Any area, but especially urban areas, can be conceptualised as a mosaic of sources and sinks. The key to successful management of wildlife habitats is to create and maintain more sources and to change sinks to sources.

11.17 Ecological Function

Wildlife corridors are vital in maintaining this interaction between sources and sinks. The following issues relate to corridors:

- They increase permeability, join fragmented habitat patches and reduce isolation
- But they also may facilitate the movement of undesirable species such as Himalayan balsam, Giant hogweed and Japanese knotweed.
- An emphasis on corridors per se might detract from a consideration of their intrinsic habitat value; habitat quality is important as well as their being a corridor
- They must be considered as a series of linked patches; habitat quality will vary along the corridor. Just because an area is a linear feature does not mean that it is acting as a wildlife corridor. Sites 6 and 7 are contiguous linked corridors but although site 6 has 90 species of flies, and site 7 has 102 species of flies, they have only 30 species in common. This difference is caused by varying habitats; site 6 has a woodland fauna while site 7 has largely a bracken fauna. In essence the more types of habitat there are within an area, the more bio diverse that area will be
- Patches need not be joined geographically with corridors but should be close enough to ensure permeability through the urban area. The URGENT (Urban Regeneration and environment Program) project has shown that the built environment is more permeable to wildlife movement than originally thought
- Corridors suit some species but not necessarily all

11.18 Habitats in Eastside

The Phase 2 Habitat Survey carried out in Eastside identified a range of sites, with differing wildlife values. In general the landscaped and heavily managed sites had little to offer Eastside's wildlife while the sites which had no design-

input or management offered the best habitat. Considerations such as site design, construction timing, ecologically informed management plans and aftercare will be vital for the ecological sustainability of Eastside.

11.19 Sites 1, 3 and 11 – Amenity Areas

Of the sites surveyed, these three were particularly species poor, especially Millennium Point. The sites are characterised by non-native, unnatural assemblages with few habitat types and regular intensive management. This demonstrates that the design and maintenance of open spaces need to be sympathetic to the needs of local flora and fauna to achieve Eastside's ecological targets.

11.20 Sites 4, 6 and 7 – Corridor Sites

These are all waterway corridors, and showed a range of species diversity. The sites with the lowest biodiversity had fewer habitat types, inappropriate management, and introduced species. Those with the highest biodiversity contained a range of habitat types and had little to no management. One of the best sites was at the intersection of the River Rea and Grand Union Canal, which is almost certainly acting as a source for colonisation to other less rich sites. It is important that all new development close or adjacent to the river and canal corridors should create areas of suitable foraging habitat and nest/roost sites for bats and black redstarts.

11.21 Sites 2 and 9 – Post-Industrial Sites

These cleared or 'bare' sites in Eastside, the product of intentional disturbance followed by little or no management, are amongst Eastside's most species-rich sites. While these sites contain habitats that are seldom intentionally designed for in urban areas, their existence is important as a source of colonisation for other areas and sites in the city. Inevitably many of these sites will disappear as development proceeds. The challenge for the regeneration of Eastside is to provide these types of habitats during and post development, by early clearance of land earmarked for development. Although the spatial pattern of such sites will change, it is important to maintain a mosaic of such sites at all time otherwise rates of natural colonisation of such sites, when they become available, will be reduced.

11.22 The management implications of this are:

Sites such as 1, 3, 4 and 11 need enhancements to encourage biodiversity and the adoption of ecologically informed management schemes.

Sites such as 2, 9 and 7, need to be maintained in their current form, enhanced where appropriate or replaced, on a like-for-like basis, where there is no alternative.

Before development proceeds, areas of valuable habitat, such as those found on sites 2, 7 and 9 should be created adjacent or close to the development site to act as temporary reservoirs for species likely to be displaced by development. These transient habitat areas should be sufficiently mature to accommodate the needs of the displaced species requiring sufficient lead-time before development commences. Upon completion of development, these transient

habitats should be replaced by permanent ground level or roof-level replicated habitats.

Adjacent sites with nature conservation status are:

Site BM026 Birmingham & Fazeley Canal Key Wildlife Corridor and SLINC
Site BM040 Tame Valley Canal Key Wildlife Corridor and SLINC
Site BM041 River Tame Key Wildlife Corridor and SLINC
Site BM060 Vauxhall and Birmingham SLINC – site now developed
Site BM058 Saltley Reservoir SLINC – site now developed

The thick-legged flower beetle (*Oedemera nobilis***)** is common in the South of England, but scarce in our region. A few specimens have been recorded in Warwickshire but none in Staffordshire. The individual shown here was recorded in Eastside and is a first for Birmingham & the Black Country. Picture courtesy of Mike Bloxham.

Front cover photo: The black redstart (*Phoenicurus ochruros***)** is a local Biodiversity Action Plan species, which favours post-industrial (brownfield) landscapes such as those currently found in Eastside. In the UK, their population is limited to less than 100 breeding pairs, the majority being found in Greater London and Birmingham. Protected under the Wildlife and Countryside Act 1981 (as amended) and the Bonn Convention, successful protection of the black redstart and enhancement and mitigation of its habitat will act as a powerful symbol of the successful regeneration of Birmingham Eastside. Photo courtesy of Craig Churchill.

Credits:
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Legislation and planning guidance correct at time of going to print.