



UNIVERSITY OF  
**LEICESTER**

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## University of Leicester Biodiversity Action Plan



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## Introduction

This 2017 Biodiversity Action Plan (BAP) is the first version to be produced by the University of Leicester and has been written in response to targets set within the Biodiversity Policy (Jan 2013). It is designed to formalise University responsibility to biodiversity conservation, but also to convert overall aims into day to day actions. It is the first step in establishing the scope of existing knowledge, understanding and current management of owned land.

The University owns and manages over 300 acres; this includes high-activity sites such as the Main Campus, as well as a remote Local Wildlife Site – Blackthorn Manor. There are over 10,000 trees and a number of protected or rare species to be found on University grounds. Current activity at time of writing includes structural and landscape development of Brookfield Campus to the new Business School and open space transformation of the Fielding Johnson car park to a pedestrianised Square.

These types of projects all have some impact on the physical environment found at the University and although campuses are predominantly characterised by tall, concrete buildings, green spaces are still prevalent and make up 40% of owned land. The extensive reach of Aylestone Meadows Local Nature Reserve into the city also creates a vital corridor for wildlife and opens up a unique opportunity to enhance urban areas. It is for this reason that careful consideration is being paid to build projects where there is huge potential to enhance campus aesthetics in balance with spaces for nature and wildlife.

The scope of this BAP has covered known habitats and species of the University, but not created individual Site Action Plans due to the enormity of work this would entail. This has potential to be expanded in future versions. However, three case studies on specific builds have been included to use as reference points for other projects and their success can be interpreted by the individual.

The greatest weaknesses that have been identified, is the lack of pooled knowledge of University flora and fauna. This is largely down to the lack of funding for a dedicated post as without such a person, there is a definite lack of streamlined effort and understanding. External consultants are called in, surveys conducted and then information lost or simply not communicated. There needs to be senior level support and recognition in order for University to prove it is ready to be taken seriously.

As this is a first draft, it is advised that this Biodiversity Action Plan should be reviewed after its first year to assess the suitability of actions, aims and monitoring targets.



## Objectives of the UoLBAP

The ultimate aim in developing the first UoLBAP is to formally recognise the importance of biodiversity within our strategic goals. This is in line with recommendations from our Biodiversity Policy, the local Council and ecological audits dating back as far as 2011/12.

Whilst many development projects can include features that integrate into building structures, enhancing biodiversity on Campus does not have to be complicated or costly. Improvements can be made by recognising outdated philosophies and making relatively simple adjustments to management practices. In order to achieve this, baseline data of what exists is required and this need has been identified throughout the BAP.

The key objectives of the UoLBAP are:

**SPECIES** To implement specialist protective measures for vulnerable and important species with reference to the City of Leicester's Biodiversity Action Plan;

**PARTNERSHIP & COMMUNITY** To establish wider links with organisations and groups to sustain and enhance biodiversity in the University and within the community. The University should continue to should grow and strengthen current relationships;

**ESTATES** To integrate the principles of biodiversity conservation into estate planning and management (Leicester for Life) with the intent to enhance existing habitats and create new spaces where possible. The University should be a role model and act as a responsible landlord to all wildlife residents;

**COMPLIANCE** To adhere to all laws, policies protecting wildlife and natural spaces; to strive to meet guidance set down by UK government and local governing bodies and be Biodiversity Net Positive;

**INSIGHT** To raise awareness of biodiversity on University of Leicester owned land and act on the need to maintain and enhance it for future generations;

**EDUCATION** To use the 'living lab' philosophy and utilise Biodiversity as a valuable teaching resource resulting in real world impacts. Offering projects and funding for research projects will enable students to gain practical experience and help meet University goals;

**STAFF AND STUDENT EXPERIENCE** To enhance the natural environment within our urban campuses using responsible planning and the creation of volunteering opportunities. Extra activities and access to nature will aim to maintain the physical and mental health of all staff and students;

## Aims, Actions and Monitoring

The UoLBAP is divided into habitat types and species groups. Within this sub-sections have been created detailing the overall aims, required actions and expected monitoring that should take place.

The last full Ecological Audit took place in 2011, but 5 years is a long enough period of time in which land use can change and species number fluctuate. There are currently little to no Site Action Plans and no Species Actions Plans available. Without solid baseline data, these will be unobtainable. It is for this reason that most of the actions within this BAP recommend an initial species survey, followed by another within at most 5 years' time. On demand surveys have taken place sporadically and particularly in the last 2 years, but it is clear that most targets need reviewing and updating.

Monitoring of actions to meet overall aims is fundamental to the long-term success of the UoLBAP. It is within Leicester's strategic aims to widen participation and community outreach and there is strong interest from academic departments to engage students and the public in monitoring activities. The Biodiversity Working Group includes representatives across the University and is responsible for carrying forth these aims whilst no official Biodiversity Officer is in post.

The following code has been used to help categorise these actions. This has been used as an example of best practice by other University BAPs.

**(M) Mandatory:** Required to comply with UK legislation and planning law

**(E) Expected:** Considered standard for most universities and important for achieving aims

**(D) Desired:** Possible longer-term targets but still valuable if able to be achieved

## Habitats on Campus

The difference between habitats on University sites is so distinct that it has been necessary to split them into two sub-types. Here, 'Built' environment refers to sites dominated by man-made structures where the biodiversity is generally low and the priority has traditionally been on managing aesthetics. 'Natural' environment, although may also represent an equally managed and maintained area, is that which is managed for biodiversity or has a priority to do so.

Under each heading is a different feature typical of that type of area; however, crossover is anticipated. It is arguable that there is little to be gained from trying to improve urban areas from a species rich biodiversity perspective. On the other hand as an educational organisation, it is essential that the University of Leicester sets a good example and it is acknowledged that with appropriate management, healthy environments for people and wildlife can be integrated into design. The aim is to enhance, encourage and extend biodiversity throughout all campus sites.

### List of sites

Blackthorn Manor

Attenborough Arboretum

Botanic Gardens

Brookfield Business School

Main Campus

South Campus – Freeman's Common

Stoughton Road Playing Fields

North Campus – Regent Road, St James Road, 19 University Road

College Court

Oadby Student Village

### Owned land

	Hectare	Acre
<b>Total site area</b>	89.95	222.26
Less building footprints	11.50	28.41
<b>Total grounds area</b>	78.45	193.85
less playing fields	26.60	65.74
less farm land	6.96	17.19
less land left fallow	4.02	9.92
<b>Total grounds area maintained</b>	40.87	101.00

## **Built environment**

### ***Individual trees and planters***

- Aims:** a) Conserve and protect mature trees  
b) Plant new trees where they cannot be retained

Trees provide a valuable habitat for invertebrates, birds and offer potential roosting opportunities for bats as well. Mature trees in particular can be important elements of wildlife corridors, which they can enhance alongside other features e.g. hedgerows. Freestanding planters with bushes or other foliage are also useful to connect areas where planting is sparse, but the effects that can be achieved are limited to soil depth.

Some trees within the University of Leicester grounds are subject to Tree Protection Orders (TPO) and as a result a formal application is required to seek approval for tree works. This is in line with the University's Tree Policy and a qualified arborist is required to make these assessments before development takes place.

A variety of fruit trees e.g. Cox's Apples have been installed in independent planters to encourage student engagement in food growing. 6 Ash trees were lost to development during the Fielding Johnson Square development and although 12 of another species were then installed, the spread of Ash dieback meant that it could be considered a loss with national concern. Undoubtedly the University has planted more trees than have been lost, but the quality of such planting should be reviewed by undertaking a tree survey on known sites.

### ***UKBAP, LBAP & UoLBAP***

Mature trees are listed in the LBAP.

### **Actions**

- Trees should be surveyed for bats and nesting birds before any removal or development works (M)
- Adhere to legal compliance regarding TPOs (M)
- Identify areas to increase fruit tree planting, either in planters or ground level (E)
- Leave standing or lying dead in both shady and sunny areas for invertebrates (D)

### **Monitoring**

- Report on status of mature trees and rate of new tree planting

### ***Amenity grassland***

- Aims:** a) Encourage use and engagement of grassland by staff and students  
b) Enhance the biodiversity of lawns through management practices

The University borrows most of its associated greenery on Main Campus from the Welford Road Cemetery (Broadleaved woodland) the playing fields owned by Queens College and Victoria Park managed by the City Council. Although most grassland in areas of FJB and Brookfield are regularly mown, in the summer they have flowers such as Red and White Clover, which is of particular interest to Bees.

Whilst there is a limited amount that can be done with amenity land, leaving these areas to grow for just a month longer or leaving a higher trim when cutting can mean pollinators can be left a valuable source of nectar. Sign posting and interpretive boards around particular areas would increase engagement and broaden understanding of management practices. Ornamental lawns should not be considered in future

development plans as part of mitigation and low level shrubbery or hedgerows would instead bring more 'body' and colour to grey areas of campus.

### *UKBAP, LBAP & UoLBAP*

Amenity grassland is not covered in the UKBAP or LBAP

### Actions

- Review mowing practice on areas of amenity grassland (E)
- Increase amount of outdoor seated areas to attract engagement with lawns and green spaces (D)

### Monitoring

- Monitor landscaping proposals to ensure success of wildflower planting

### ***Buildings, structures and paving***

Aims: a) Integrate design features for wildlife into all new developments at planning stage  
b) Minimise the impact of all maintenance and developments

A considerable number of buildings exist on the Main Campus and hard-surfaces dominate the landscape. Maintenance and new developments have the potential to have a huge impact on biodiversity, but can also mean opportunities for enhancement.

Generally the University can be credited by trying to reduce car parking availabilities on campus in line with Travel Policies and the City Council's air pollution strategy. This is encouraged and increased planting around these areas provide valuable connections for wildlife across the campus. Birds have been identified nesting in air vents and drinking water from roof tops, so buildings can be used as locations for integral or external bird and bat boxes. Swift boxes have been erected on the Astley Clarke Building and Peregrine boxes on the Attenborough Tower and Charles Wilson Building.

When appraising land for biodiversity, 3 criterion may be used to assess its importance, risk or significance. The below is used as an example

- *Blackthorn Manor* – C1: A site of high local or national biodiversity value
- *Main Campus* – C2: A high-activity site with long-term maintenance or development
- *Brookfield Campus* – C3: A building site undergoing immediate development and renovation

### **Criterion 1** Biodiversity Value:

A site with a high biodiversity value with importance to the University, locally to the community, nationally or globally. It has a good potential to create opportunities for research, enhance student learning and improve student satisfaction via volunteering experiences.

### **Criterion 2** Long-term activity:

A site frequently under development and maintenance, which places biodiversity at a higher risk of disturbance. It may also offer the biggest opportunity for improvements and enhancements due to constant change and wider campus planning.

### **Criterion 3** Planning stage:



A site which is currently undergoing planning with development occurring within the next 12 months; an opportunity for easy-wins. This may be a specific building or land area and has the potential for improvement, even if biodiversity value is low.

### Green Roofs and Living Walls

In the absence of space for grassland areas, features such as Green Roofs and Living Walls can be integrated into buildings. These can be particularly useful in built-up sites and adds attractive colour to otherwise grey and sparsely green areas. As well as providing undisturbed locations for wildlife, they can also have multiple benefits to buildings by protecting roof membranes and absorbing CO<sub>2</sub>.

The University has recently acquired its first Living Wall, a modular system planted with over 17 species good for pollinators and other insects, but also strawberries for people as well. Although a repeat of this design is unlikely, similar benefits can still be achieved (and cheaply) by training climbing plants in pots up frames or walls.

There are also an estimated 4 Green and Brown Roofs on the campuses, two located in Oadby Student Village and 2 on the Centre for Medicine. Main Campus in particular has a vast amount of flat roofs that can be seen from the Attenborough Tower and Charles Wilson Building. Although expensive and dependent on weight loading, Green or Brown Roofs should be considered to enhance campus connectivity.

### UKBAP, LBAP & UoLBAP

There are no descriptions available of a building landscape habitat in the UKBAP Priority Habitat Descriptions. The LBAP, however, acknowledges that the ecological value of built structures is poor and is included in their Habitat Action Plan.

### Actions

- Ensure legal compliance to all planned developments is met (M)
- Initiate case study and area map of planted roofs and Living Walls (D)
- Make waste materials available for construction of bug hotels (D)

### Monitoring

- Survey roofs and walls for wildlife activity to create baseline data
- Record activity seen in any bird boxes installed



## Natural environment

### *Broadleaved woodland*

- Aims:** a) Preserve the health and accessibility of woodland environment  
b) Promote communication and engagement of known broadleaved woodland areas

Woodland provides an important habitat for a variety of flora and fauna; even small areas can support a diverse range of species and are highly valued (not just in a university context) for engagement and education.

Sites of particular interest include the Attenborough Arboretum and Blackthorn Manor. The former covers 5 acres of land and forms part of an area that used to belong to a local farm. It is well-visited by schools and other groups as it features an existing example of a medieval ridge-and-furrow field, as well as two large ponds and constructed boardwalk. The trees are of particular interest as they feature native species in sequence to which they arrived in the country following the last ice-age. Known examples include Scots Pine, Juniper, Hazel and Birch, although alien species are also planted in the area. Management of this site (as well as the Botanic Gardens) is less well known as control lies with the Gardens Team and other academic departments.

Blackthorn Manor's woodland makes up less than 25% of the site as it is dominated more so by semi-improved neutral grassland (see following section). It should be considered whether to expand this woodland area into neighbouring fields as part of existing partnership arrangements with The Woodland Trust or 'farm' the grassland for hay.

With the recent addition of 1,000 new saplings to the Stoughton Road Playing Fields in Oadby, fresh monitoring and surveys of this site would create interesting comparative studies for species richness.

### UKBAP, LBAP & UoLBAP

Broadleaved woodland is included in the UKBAP and UoLBAP.

### Actions

- Protect and maintain new saplings at the Playing Fields (E)
- Identify further areas to plant orchards on campuses (D)
- Observe and review Blackthorn Manor Management Plan (E)

### Monitoring

- Report on the status of woodland areas every 5 years

### *Species Improved Grassland and Meadows*

- Aims:** a) Review management practices and increase opportunities for University research  
b) Increase the extent of wildflower planting through campuses

In contrast to amenity grassland, species improved or rich grassland can contain a mosaic of different plants and can support a wild variety of different invertebrates.

Blackthorn Manor has 3 fields of mesotrophic grassland and contains species such as bird's foot trefoil, meadow buttercup and ragwort. It is largely dominated by perennial rye grass but with an appropriate mowing regime, the grassland would be able to diversify. Ideally, grassland should be cut and the 'hay' placed over the disturbed ground so that seed heads from the sward can germinate.

Wildflower planting in other areas of the campus would not detract from the well-maintained image of the main campus and instead adds interest and aesthetic appeal. At time of writing, the Fielding Johnson Building project is entering Phase 2, and design planners are being encouraged to use the non-recreational area as wildflower gardens.

#### UKBAP, LBAP & UoLBAP

Both the UKBAP and LBAP make reference to improved grassland areas.

#### Actions

- Review and act upon Blackthorn Manor Management Plan (E)
- Reduce or eliminate the use of herbicides (D)
- Increase wildflower diversity at Brookfield Orchard and use as case study for further projects (E)

#### Monitoring

- Monitor change in practices by surveying areas for species diversity

#### ***Ponds and wetlands***

Aims: a) Maintain and enhance both ornamental and wildlife ponds on campus  
b) Increase number of wildlife ponds on campus

Ponds are a valuable wildlife habitat for a variety of plants, insects and amphibians. They also provide valuable feeding sites for birds and bats and the inclusion of these features are easy means of increasing biodiversity in the area. From a design perspective, they also create a more pleasing habitat for staff and students. There are a number of ponds on University land but their biodiversity value varies considerably.

Ornamental or fish ponds such as at Brookfield House, have limited potential but can be improved upon at a basic level. With development to this site forthcoming at time of writing this document, the intention is to oxygenate the water via an aeration fountain. As this will only improve the aesthetic, recommendations have been made to introduce increased planting to the pond via contained pots and introduce gravel to the concrete bottom to protect invertebrates from fish.

The Fielding Johnson Building pond, in contrast, has identified Smooth and rare Great Crested Newts (see Species section). The management of this pond is therefore more urgent and monitoring for excess nutrients and plant identification should be a part of its management plan. Management of these ponds seem to be under the control of Gardens but knowledge of their contents is disparate and largely estimated.

The creation of additional ponds on the campus would be an ideal method of increasing biodiversity and can be incorporated into SuDs systems and thus be retro fitted to existing buildings.

#### UKBAP, LBAP & UoLBAP

The UKBAP has very specific requirements for high quality ponds only, where as there are currently no plans in existence for ponds in the LBAP or UoLBAP



### Actions

- Create a map of known ponds, types (ornamental/wildlife) and known species (D)
- Survey the Fielding Johnson Building pond using GCN licensed expert (M)
- Integrate pond creation into Development Team planning options (D)

### Monitoring

- Baseline survey of wildlife ponds to be conducted for research data
- Ponds to be surveyed for amphibians and aquatic invertebrates every 5 years

### **Hedgerows**

- Aims: a) Maintain the network of existing hedges and increase their connectivity  
b) Improve wildlife value of current and prospective hedgerows

Hedgerows are of wildlife interest in themselves, but their value to biodiversity is dependent on their species composition and management or their links with other wildlife habitats. Hedges and associated trees provide food for birds and bats as well as potential shelter, nesting and roosting places. Dependent on the species present and age, they can be an excellent habitat for invertebrates and Hedgehogs routinely use them for protection during travel. They are of most value to wildlife if they have good height and depth and are allowed to flower and fruit and suppressed when frequently cut or mowed around the base too closely.

Hedgerows around the built-up areas of campus are lacking diversity and would benefit from introducing further native hedgerow species in order to attract birds and invertebrates (especially bees and butterflies). Whereas Blackthorn Manor has species rich intact hedgerows that are excellent for small mammals, areas of Main Campus and Freeman's Common are in poor condition with exposed bases.

### *UKBAP, LBAP & UoLBAP*

The UKBAP and LBAP both have plans for hedgerows and include the identification of hedgerows across the city. UoLBAP does not have a hedgerow plan.

### Actions

- Review the planting and management practice of hedgerows by Gardens Team (E)
- Hedgerows under threat should be surveyed for nesting birds and hedgehog activity (M)
- Improve wildlife value of hedges by diversifying planting (E)
- Create a map of known hedgerows to aid LBAP (D)

### Monitoring

- Hedges and new planting surveyed to gather important baseline data
- Hedges surveyed every 5 years as part of continuous monitoring

## **Species**

### ***Badgers***



- Aims: a) Protection of badgers on identified campuses  
b) Maintenance of area near setts

Badgers and their setts are protected by the Badgers Act 1992, under which it is an offence to damage, destroy or obstruct a badger sett, whether or not it is occupied by badgers. A sett is defined as “Any structure or place that displays signs indicating current use by a badger”.

Increased building activity, road building, loss of feeding areas and a significant increase in artificial lighting on the campus is likely to have a negative impact on badger activity. Protection of the woodlands, hedgerows, creation of new feeding habitat and appropriate lighting that respects the needs of wildlife as well as people can go a long way to alleviate that impact. Regular monitoring of badger activity, particularly the location of active setts, is essential to reduce likelihood of delays in planning development.

There is an active main sett present at College Court with 6 holes showing evidence of use between it and the artificial sett. Badgers have refused all previous attempts to shut down or relocate in the past. Future developments should treat College Court as a case study for badger interaction and a competent ecologist needs to be responsible for their surveying and monitoring. Badgers may also inhabit the area around Blackthorn Manor but this is largely unknown.

#### *UKBAP, LBAP & UoLBAP*

Badgers are not a species for conservation concern but legislation protects their welfare and a license is required to interfere with their sett. Their presence on university campus includes them as a UoLBAP species.

#### Actions

- Meet legal requirements for the protection of badgers (M)
- Creation of feeding areas that are attractive to badgers by leaving ‘untidy’ corners or spaces suggest as compost heaps. These will attract earthworms and other wildlife to act as food source (D)
- Creation of artificial sett if Badgers are found at Blackthorn Manor (E)

#### Monitoring

- Conduct survey via qualified ecologist every 5 years and make sure data is available to stakeholders and relevant staff via plotted map. This may become more frequent with development
- Conduct investigation into Blackthorn Manor site for Badger activity

#### ***Hedgehogs and small mammals***

- Aims: a) Continue the student projects on hedgehog monitoring and climate change over 5 years  
b) Provide suitable habitats to encourage hedgehogs and other small mammals

In the last 10 years, hedgehog numbers have dropped by over 30% and there are thought to be less than one million left in the UK. They benefit from partial protection for the Wildlife and Countryside Act 1981 and other legislation. Increased building activity, road building, loss of feeding areas and a significant increase in artificial lighting on the campus is likely to have a negative impact on hedgehog activity. Protection of the woodlands, hedgerows, creation of new feeding habitat and appropriate lighting that respects the needs of wildlife as well as people can go a long way to alleviate that impact.

Although hedgehogs are known to hibernate for a period over winter, climate change is predicted to impact this behaviour by delaying sleep or prematurely waking the animals. This may affect their access to food

sources and their fat reserves. Other threats include food competition from badgers which are known to be in certain areas.

It was discovered during a student monitoring that there were two hedgehogs of surveyed locations around Oadby and Main Campus area using tracking tunnels. Two nest boxes were put down at Brookfield and Main Campus but there has been no registered use of them. Gardens Team have been advised to review hedgerow practices on this feedback.

Blackthorn Manor is a locally important site for small mammals, but there is a shortage of records (mice, voles and shrews) here, although foxes have been frequently seen here.

### *UKBAP, LBAP & UoLBAP*

The UKBAP has a priority action plan for hedgehogs but the LBAP does not specifically mention them. The LBAP does however include hedgerow objectives including enhancing the connectivity and structure of them. This has been included in the UoLBAP.

### Actions

- Create Species Action Plan for Hedgehogs (E)
- Creation of feeding areas that are attractive to Hedgehogs by leaving 'untidy' corners or spaces, such as compost heaps. These will attract earthworms and other wildlife to act as food source. (D)
- Enhance connectivity of hedgerows and review trimming and planting procedure according to wildlife activity recorded (E)
- Encourage student projects based on awareness and monitoring (D)

### Monitoring

- Recruit student dissertations or projects on Hedgehog study for 5 years on a continual basis. The use of tracking tunnels at known sites will be very useful and students should feedback results to Working Group for consideration and analysis
- Do small mammal surveys for the area and repeat on continual basis

### **Bats**

- Aims:** a) For all development and planned works to be assessed for bat roost potential prior to works being carried out (M)  
b) Maintain and increase suitable habitat to encourage insect prey and bat commute (E)

All bats and bat roosts are fully protected by European law and licensed ecologists are required to undertake full surveys. Bats commonly roost in buildings and trees are so are under threat due to loss of these sites and reduction in suitable habitat for commuting and feeding. Changes in agricultural practices and increasing urbanisation and road building have also severely reduced connectivity of the habitat needed by bats.

The Main Campus is dominated by buildings, areas of hard standing, ornamental planting and introduced shrub with an area of amenity grassland in front of the Fielding Johnson Building. The site is adjacent to Victoria Park and Welford Road Cemetery, both of which provide valuable habitats for many species of fauna, including the brown, long-eared bats which have been seen flying above the trees which frame the cemetery. The Fielding Johnson Building is likely to be a roost site for bats as there are multiple records of

the common pipistrelle recorded on an Anabat. Some of the mature trees within the Attenborough Arboretum could also be potential roost sites for bats.

#### *UKBAP, LBAP & UoLBAP*

The UKBAP has priority actions plans for bats but the LBAP only refers largely to their habitat and not them directly.

#### Actions

- Consults ecologists prior to works on buildings or trees (M)
- Create wildflower areas and ponds for insect feeding (E)
- Assess scheduled maintenance and development projects for integral bat box potential (D)

#### Monitoring

- Collate current bat surveys and conduct where necessary to provide baseline data
- Conduct surveys of bat activity every 5 years

### **Reptiles, amphibians and invertebrates**

Aims: a) Provide a variety of habitats attractive to amphibians, reptiles and invertebrates  
b) Encourage the uptake of student projects and construction of bug hotels on campus

The UK has 6 native reptile species, 3 snake and 3 lizard. In broad terms, they require a variety of habitats from wetlands to dry banks. Amphibians makes use of both terrestrial and aquatic habitats and invertebrates will do the same. The latter form an important food source for the above, as well as birds and bats. Bees, moths, hoverflies and other pollinators perform a vital function in pollinating many plants.

Surveys of reptiles have been carried out at locations such as Blackthorn Manor and Brookfield, but habitat suitability is low and no evidence of their presence has been found. Amphibians, on the other hand, have been identified at Main Campus. Great Crested and Smooth Newts were surveyed and found in the Fielding Johnson Pond in 2013, but their status since that point is unknown. It is offence deliberately capture, injure, deliberately disturb or kill a GCN. Any action on the part of a staff member requires a license and could result in fines in excess of £2000. After further survey work, it was determined that GCNs were not present at Blackthorn Manor

In regards to invertebrates, the key to a diverse population is a variety of habitats such as woodlands, tree, hedges, pond and grasslands. The implementation in this plan should bring about an increase in insect species. Two student surveys conducted on insects and food sources of hedgehogs on University campuses, revealed native trees to have a wider variety of invertebrates than foreign trees. This should be promoted as a worthwhile study to be taken forward by another student.

#### *UKBAP, LBAP & UoLBAP*

The UKBAP and LBAP both give guidelines to protect the habitats in which these species are present.

#### Actions

- Undertake surveys for amphibians, reptiles and invertebrates (E)
- Create Species Action Plan (E)
- Provide a list of student projects and volunteering opportunities around these species (D)



Monitoring

- Collate current reptile, amphibian and invertebrates surveys and conduct where necessary to provide baseline data
- Conduct surveys of the above every 5 years

**Birds**

Aims: a) Protect nesting birds (M)

b) Increase the variety of habitats on campuses that are attractive to birds (D)

In the UK, all wild birds, their nest and their eggs are protected by law in the Wildlife and Countryside Act 1981. The amount of protection afforded to wild bird varies depending on whether the species are listed on various Schedules or Licenses. Due to the fragmented state and difference between sites, the variety of bird types vary greatly.

The commitment in this plan is to consider manage University habitat in a more wildlife friendly way. Alongside this, design additions such as integral bird boxes can be considered for listed species such as House Sparrow, Starling and Swifts but they also provide opportunities for other common birds as well. External bird boxes should also still be reviewed as a possibility for Pied Wagtails that are widespread at the University

Students are commonly interested in this research area and should be encouraged for long-term monitoring projects. Blackthorn Manor should be utilised for its full potential in this manner and should be made available to students for research projects and dissertations.

*UKBAP, LBAP & UoLBAP*

The UKBAP has priority action plans for birds that have been recorded on or near the main campus. The LBAP protects the habitat in which they commonly occur.

*Birds of Interest*

Red Listed	Starling	Song Thrush	Mistle Thrush	Black Redstart	House Sparrow
Orange Listed	Bullfinch	Tawny Owl	Common Swift	Dunnock	
Green Listed	Pied wagtail	Sparrowhawk	Peregrine Falcon		

Actions:

- Carry out nesting bird surveys prior to works on or close to buildings and trees (M)
- Carry out bird surveys to determine species using the campus (E)
- Assess scheduled maintenance and development projects for integral bird box potential (D)

Monitoring:

- Make annual checks of bird boxes
- Encourage student research projects and staff engagement in bird watching and monitoring. Report these to the Biodiversity Working Group for feedback and assessment

## **Conclusions**

The recommendations within this document are expected to be tested in the first year to ascertain if they are readily achievable. All actions suggested are possible but the manpower required to conduct them relies on the creation of a Biodiversity Officer post in some format. Although student projects are useful and valuable, the likelihood of them providing solid baseline data in which to continually monitor sites and species is debatable.

The University of Leicester should consider itself the landlord for all wildlife species within its grounds and act in accordance to best interests of the tenants. It is likely that some ecology data is readily available through other sources unknown to this BAP and if such, should be collated into easily accessible folders and files in the departmental X drive.

Engaging with students, staff and members of the community is essential to raise awareness and encourage best practice. 24 hour Bioblitzs should be more frequent and small projects led by people outside expected departments can be highly beneficial. The importance of attaining understanding at all levels at the University is paramount to biodiversity conservation and there are good signs to suggest it can be accomplished.

## Appendices

- **Ecologist reports**
  - Brookfield Campus Ecology Appraisal (June 2010)
  - School of Business Extended Phase 1 Habitat Survey (February 2017)
  - Ecological Audit of the University of Leicester (2011/2012)
  - Blackthorn Manor Ecological Survey (July 2010)
  - Blackthorn Manor Newt Survey (May 2010)



Blackthorn Manor Management Plan (March 2012)  
College Court Badger Report (April 2017)  
College Court Badger activity (August 2012)  
Plan of Attenborough Arboretum ( July 2013)  
BREEAM Ecology Report Manor Road (July 2011)

- **References**

UK Biodiversity Action Plan (1992) <http://jncc.defra.gov.uk/page-5155>  
Leicester Biodiversity Action Plan (2011-2021)  
<https://www.leicester.gov.uk/media/113637/leicesters-biodiversity-action-plan-2011-21.pdf>  
Biodiversity Officer Business Case (2012/13)  
Tree Policy Statement (2010)

- **Links on management advice**

ARC Trust, Amphibian and Reptile Conservation <https://www.arc-trust.org/>  
Badger Trust <https://www.badger.org.uk/>  
Bat Conservation Trust <http://www.bats.org.uk/>  
Canal & River Trust <https://canalrivertrust.org.uk/>  
The Green Roof Centre <http://www.thegreenroofcentre.co.uk/>  
RSPB <https://www.rspb.org.uk/>  
Wildlife Trusts, Helping Hedgehogs <http://www.wildlifetrusts.org/hedgehogs>  
The Woodland Trust <https://www.woodlandtrust.org.uk/>  
RHS, Pollinators <https://www.rhs.org.uk/science/conservation-biodiversity>

- **Interested stakeholders**

Leicester Badger Group  
Leicester Hedgehog Rescue  
Leicester and Rutland Wildlife Trust  
Leicester and Rutland Ornithological Society

- **Additional documents**

Case studies of University of Leicester Developments  
Development Options

## Case Studies of University of Leicester Developments

The following case studies were compiled after planned build projects were due to take place, which either impacted or had potential to enhance biodiversity. They were conducted alongside the Development Team and other relevant staff in the University. These case studies may be used as best practice examples of how biodiversity can be protected and enhanced at a variety of project scales and costs.

### Brookfield Business School – High cost project



UNIVERSITY OF LEICESTER



*New plans with identified areas for enhancement and mitigations proposals*



*New structural renovations including green roof*

**College Court – Low cost**

**project**

*Before*

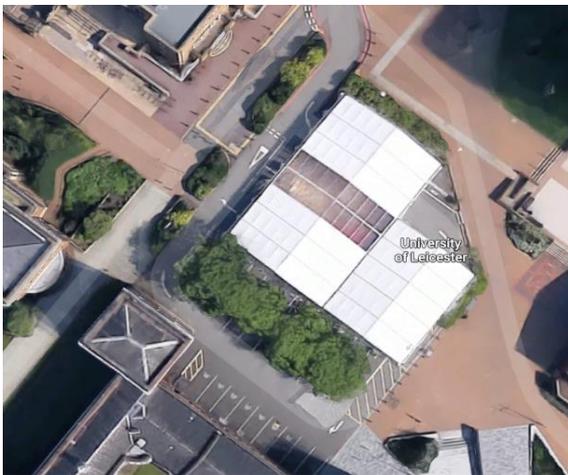
*After*



**Fielding Johnson Square – Moderate cost project**

*Before (with Marquee and original surfacing)*

*After (without additions)*



*Design pending approval, complete with seated planters and edible herbs, larger planters and new trees*



**Site description:** Current Postgraduate Teaching Centre with ornamental pond, Hungry for Change plot and vast lawns with TPOs.

**Stakeholders:** Gardens, Environment Team, Development Team, School of Business and Students' Union

**Principal project aim:** Transform old Victorian house and gardens into Brookfield Business School

**Beneficiaries:** Insects, amphibians, birds, hedgehogs, students and staff

**Current status:** Recommendations ongoing

### Situation

The Brookfield Postgraduate Teaching Centre was acquired in 2013 and is current home to Estates. Development is due to start in September (2017) to turn it into the new School of Business, but this involves renovating the old Victorian House, removal of several trees (including Ash and English Oak), hedges and inclusion of new access points. The site is characterised by amenity grassland, 2 man-made ponds, trees with TPOs and 13 buildings.

### Targets

The aim is to ensure that Brookfield retains the garden aesthetic that characterises the site and maximises the potential for biodiversity enhancement. Species of conservation concern need to be safeguarded, with a focus on reviewing the management plans and planting regime to provide food and nectar sources for birds and invertebrates.

### Actions

Planning are aware of legal compliance and a Phase 1 Habitat Survey has been conducted with Bat survey results due in the near future. A number of recommendations have been made by the Environment Team by identifying various areas of interest, which have been reviewed by the Biodiversity Working Group for consideration (see images).

- Zone 1 – Consider planting of RHS 'Perfect for Pollinators' species such as; Verbascum, Echinacea Purpurea and Phlox 'White Flame'
- Zone 2 – Pond to be located elsewhere to avoid tree debris, improve oxygen levels and insect diversity
- Zone 3 – Create herb garden with the use of small planters e.g. Chives, Borage, Bee Balm and Thyme
- Zone 4 – Fish pond; should increase aquatic plants and add gravel to provide cover for invertebrates
- Zone 5 – Review opportunities for integral bird and bat boxes

A variety of species of conservation concern, including Hedgehogs and House Sparrows, are also known to the area and appropriate vegetation should be planted and managed to provide recognisable food sources for invertebrates.

### Results

The most recent design drawing has now been given approval by the Biodiversity Working Group and considerations can now be made for ongoing monitoring. The Green Roof was an original design addition that was the result of good communication and previous projects between Development and Environment Team

### Learning Outcomes

- Use big projects to make small enhancements using the capital funding available

### College Court



**Site description:** College Court Conference Centre near to Attenborough Arboretum

**Stakeholders:** Gardens, Environment Team and Development Team

**Principal project aim:** Resurfacing of overspill, dirt car park

**Beneficiaries:** Badgers and pollinating insects

**Current status:** Completed

### Situation

The Environment Team was approached by a member of the Development Team, who needed guidance on a project to level and concrete over an overspill, dirt car park. This area was known to have badgers and whilst the Project Officer was aware of the regulations regarding them (Protection of Badgers Act), wanted to involve the Team to ensure legal compliance was carried out. Whilst in conversation, it was uncovered that there was scope to improve the area for wildlife as other works were carried out.

### Targets

The aim was to ensure that because the Officer chose to proactively approach the Team directly, that good relationships were maintained and behaviour encouraged for future projects. Although there was no-one qualified to conduct badger surveys for the site, support could be offered by reviewing external surveys and react to developments as they occurred. As a biodiversity enhancement opportunity had also arisen, options needed to be devised as to how this might be achieved and what extent to attempt this.

### Actions

The Project Officer was able to send the Team pictures of the area, which was then forwarded to a staff member of the Bumblebee Conservation Trust. Pollinators have globally significant importance and it was felt that including better flowers and shrubbery would be an easy win situation that didn't entail vast amounts of money being spent. As the University has raised money for the charity recently, it was an opportune moment to make use of their expertise. A mitigation document due to be sent to the Council was also reviewed by the Team and the badger survey was double-check to corroborate known activity.

### Results

A selection of plants recommended by the BBCT were chosen by the Gardens Team (Lavender and Geraniums) and planted with good results. There were some issues with slugs but this was expected to improve further into summer. The variety and colour planted, however, is a marked improvement from before and this success was further demonstrated by the good relationship created.

### Learning Outcomes

- Encourage Environment Team engagement early on in projects to give maximum advice and input
- Utilise expertise with charities and also academic departments for free advice where lacking in the Team
- Gardens Team should be consulted more often by Development and earlier into the planning stage



**Site Description:** Centre feature of Main Campus with huge potential for events and engagement

**Stakeholders:** Gardens, Environment Team, Estates Development Team, Students Union, DARO (Alumni relations), Health and Wellbeing, Attenborough Arts, Catering

**Principal project aim:** Transition from car park to engagement space

**Beneficiaries:** Pollinating insects, students, staff and visitors

**Current status:** Final stage

### Situation

The Fielding Johnson Car Park was situated in the centre of Main Campus and had cars regularly arriving and departing. The aim was to transform it into an engagement space that would allow flexibility of use; particularly important was the erection of a large marquee or individual stalls. Originally it was framed by a single species hedge in poor condition. It had two concrete planters with Gorse and Lavender, as well as 6 Golden Ash trees that needed removing. Having a 'greener' space was not a priority when the plans were created, but became more so with the appointment of a new Director of Estates after the foundations had been completed.

### Targets

The aim was to soften the harsh, dominating grey landscape of the resurfaced Square by introducing more plants for people and wildlife. This is the University's most common criticism of its physical space and so recommendations were required for ways to combat this.

### Actions

The Environment Team requested to have presence at the FJB meetings, and entered into conversation with other stakeholders after resurfacing was completed. As Gorse and Lavender removal was a recognised loss for biodiversity, an additional recommendation of seated planters was made and plants chosen from a 'Pollinator approved' list. Plastic, grey and 'funky' furniture was dismissed in favour of wooden material as a more sustainable (FSC approved) option. To further engagement and BAP targets, edible herbs were advised to be included and managed by the food growing society, Hungry for Change and the Gardens Team. When not in use, the Furniture will be moved to FJB lawn.

### Results

The design is awaiting its final approval, but the current plan maps out an attractively green space that balances engagement, activity and biodiversity. Although the Environment Team were included in conversations eventually, there was some delay before this occurred and Gardens were not consulted until later. There is still a tendency to choose ornamental plants and there is a clear need to review this dated approach to design. However, the comments made are clearly valued and there has been useful communication access to the landscape designer.

### Learning Outcomes

- There is a strong preference for green spaces over formal, artificial features
- Adaptability for planting should be considered early on in the design, allowing for additional funds or projects to enhance the area in the future



The most important piece of advice that can be given when considering biodiversity in development projects is that it doesn't have to be expensive, complicated or big. The following suggestions may include aspects of the above, but cheap, simple and small options can typically provide the best results and may only require a rethink of current management practices.

Much of the information can be found and credited to *Building for Biodiversity* by Kelly Gunnell, Brian Murphy and Dr Carol Williams.

### ***Bricks & Tiles***

- Bird Bricks and Tiles
- Bat Tubes / Bricks and Tiles
- Bug Bricks

These are integrated roosting and nesting feature for birds, bats and insects that can be designed at the planning stage into the wall or roof of most concrete structures. There now exists a vast range of brand providers who offer integral boxes and have been installed in domestic houses in locations across the UK. They offer species which rely on the urban structures (e.g. common swift) a safe place to breed and stay safe as more buildings emphasis energy-saving and gap elimination. As Leicester's building stock is full of old structures need refurbishment, there may be huge potential in this area.

### ***Green Roofs***

These are planted roofs constructed from underlying waterproof layers and built-up substrate. Many different types are available – from roof gardens to blanket sedums and if designed well have a number of benefits to biodiversity. They can also have energy-saving and aesthetically pleasing characteristics, but are a more expensive option to be considered. They can be retro-fitted to existing buildings and built into new projects. Leicester has many flat roofs with tall building overlooking many of these, making this an interesting option to pursue.

### ***Living Walls***

Walls are a very visible feature and have a huge impact on the experiences of people within the environment. Different types are available – from modular systems to planted wire frames and can provide food sources to birds, bats and insects. These can be a more pricy option if a water-fed system is desired, but good effects can still be achieved cheaply with honeysuckle or other climbing plants grown from planters and trained to the wall. Leicester's Campus has been accused of feeling grey and unwelcoming during certain seasons; this provide one option to alleviate this but grade-listings of certain buildings should be considered.

### ***Hedges***

These areas can provide important linking features for many different species. Height and width are important as birds and bats use them as commuting flightpaths, whilst ground-dwelling mammals and amphibians use dense growth at the base for food, cover and places to hibernate. Habitat fragmentation is one of the biggest concerns for Hedgehogs and green infrastructure can combat this effect. Communicating with your Gardens Team to review their management practices regarding this can be an easy method for encouraging growth and wildlife.

### ***Trees and woodland***



The University of Leicester has over 10,000 trees and the last 1,000 planted have been chosen because they are native to the UK. This is a trend that should generally continue due to their suitability to the UK wildlife. A variety of species would provide different sources of pollen, nectar and fruit allowing greater access to these resources for more of the year. Their importance should not be underestimated and mature / standing deadwood can hold valuable traits for wildlife. Trees also provide a number of ecosystem services including carbon capture and filtering pollutants. As Leicester has some of the highest levels of air pollution in the UK, increased tree numbers should be intrinsic to the University's Plan.

### ***Low-level planting, shrubs and scrubs***

Choosing a variety of plants that are good for pollinators can make a big difference and these can be planted in the ground, in planters or even integrated into seating areas where students and staff congregate. Herbs and other edible plants can encourage engagement with the environment they are in, accompanied with the added biodiversity benefit. Leicester would benefit from flexible thinking regarding campus design and consider embedding these features early in the design phase to avoid complications later.

### ***Ponds and wetlands***

Water is an essential feature and ponds can be an essential link in ecosystem services. Leicester has a large amount of hard-standing surface area and as developments continue, would benefit from considering these areas to collect rainwater run-off. Small wildlife ponds (no fish) and free from filters could prove an inexpensive and low-maintenance projects by utilising the volunteering groups of staff and students. Other water-retaining ideas include rain gardens and detention basins.

### ***Grassland and wildflowers***

Long grass provides a habitat for a variety of insects and leaving areas left unmown or allowed to grow for longer can prove cost-saving and beneficial for biodiversity. Retaining areas over winter particularly where adjacent to hedges and, shrubs and trees and will make sure flower-rich grassland has enough opportunity to drop seeds for next year. Ornamental lawns can be interspersed with flowerbeds suitable for pollinators and Fielding Johnson Building already demonstrates a good compromise of this.

### ***Master planning***

Planning ahead for the future including biodiversity in designs around roads and parking will help the University avoid time delays with government planning and legislation. Future-proofing for the next 50 plus years is the biggest step towards tackling climate change and ensuring the University has a sustainable business plan.

### **Basic Principles for Biodiversity at Leicester**

- 1. Retain existing vegetation and habitats where appropriate**
- 2. Create new habitats**
- 3. Connectivity**
- 4. Target species**
- 5. Incorporate tree planting**
- 6. Wildlife-friendly planting**
- 7. Multi-functional green infrastructure**
- 8. Sustainable drainage systems (SuDS)**
- 9. Artificial lighting**
- 10. University support and community involvement**