



University of
Sheffield

Estates &
Facilities
Management



Biodiversity Action Plan.

2023 – 2028



Jessop Building and The Diamond

Introduction



The University of Sheffield owns and manages a significant area of green space. As an environmentally responsible organisation we produced our first Biodiversity Action Plan (BAP) in 2011. The first plan identified opportunities to protect and enhance the quality and biodiversity value of the University's estate and, since then, we have significantly improved both.

Since the publication of the first edition the nature and scale of climate and ecological emergency has become more evident. Our future is inextricably linked to our relationship with the natural world and we recognise our responsibility to protect and enhance the green space that we own. Over the next decade we aim to increase the total area of green space across our estate and create resilient urban habitats.

Charlotte Winnert
Environment Officer, Estates & Facilities Management

What is biodiversity and why is it important?

Biodiversity is the variety of life on earth, and includes all species of plants, animals and the natural systems that support them.

Not only does biodiversity have an intrinsic value, it is also the earth's life support system, providing essential services ranging from clean water and air, crop pollination and products such as timber, through to the potential to help in flood mitigation and alleviating the effects of climate change. Culturally, biodiversity provides opportunities for recreation and tourism and contributes to well-being.

Biodiversity is everywhere – not just in nature reserves, national parks and the countryside. It is also in our towns and city centres, where it can be found everywhere, from roadside verges and roundabouts to back gardens and from former industrial sites to parks and recreation grounds – in fact biodiversity can be found in almost any urban green space!



Bumble bee (*Bombus spp*)

What is the University's vision?

Climate change is happening quicker than anticipated and biodiversity is in decline. We must act quickly to address carbon emissions and restore and protect biodiversity.

We aim to become one of the most sustainable research-intensive universities in the country and published our Sustainability Strategy in 2020. We are committed to embedding sustainable practice across everything we do, and our strategy strengthens our commitments to maximise the ecological value of our green space for the benefit of a wide range of flora and fauna, whilst at the same time retaining its functional value.

Our long-term vision is not only to increase the amount of green space the University has, but to improve the biodiversity value of the existing estate and to contribute, where possible, to local, regional and national biodiversity targets. We hope to “connect” our estate with other green spaces, green corridors and the wider countryside, for example the Peak District. We will also manage and develop our green space so that it provides positive benefits and psychological well-being to our students, staff and the people of Sheffield who regularly travel through our estate.

The University's specific objectives are to

- Maximise opportunities to increase and improve biodiversity in University developments.
- Develop good quality, ecologically structured and diverse habitat in appropriate locations.
- Break down the barriers between green and grey space on the existing estate.
- Engage with and educate students, staff and other interested parties.
- Provide field work opportunities for students.
- Promote increased psychological well-being through engagement with the natural environment.
- Ensure compliance with section 40 of the Natural Environment and Rural Communities Act – see page 5.

Promoting the wider benefits of biodiversity

Humans have a biophilic relationship with nature; we have an innate sensitivity to and need for other living things. Biodiversity provides many opportunities for leisure and recreation.

The natural world has provided the inspiration for many artists and continues to do so. The health and psychological benefits of biologically diverse environments are well documented; studies demonstrate that great improvements in mental health and well-being can be derived from green spaces. The extent and quality of urban green space has become increasingly important

as, in many cases, the only interactions that urban residents have with the natural world and biodiversity are in public green spaces. A key objective of the University of Sheffield BAP is to build on these wider benefits to improve our estate, not only for biodiversity, but also for our students, staff and visitors alike.

What are the threats to biodiversity?

Climate change and ecological breakdown is the biggest threat facing humanity. Nature is declining globally at rates unprecedented in human history – and the rate of species extinctions is accelerating.

The UK is one of the most nature-depleted countries in the world and has lost almost half of its wildlife and plant species since the Industrial Revolution. This trend has continued over the last 50 years, for example:

- Since the 1970s, it has been shown that **41%** of all UK species studied have declined.
- **26%** of the UK's mammals are at a very real risk of becoming extinct,
- **22%** of seabird species studied have declined in the last five decades.
- Since the 1950s the number of hedgehogs have declined by **95%**, while turtle doves have crashed by 98% and even numbers of the common toad have fallen by 68%.

Source: Natural History Museum.

nhm.ac.uk/discover/news/2019/october/the-state-of-nature-41-percent-of-the-uks-species-have-declined.html

Human activities are directly responsible for these losses. Development, agricultural intensification and changes in both agricultural and woodland management practices have all contributed to habitat loss and degradation – a major factor in the decline in biodiversity in the UK. Environmental pollution, specifically water pollution, air pollution and climate change have played a significant role in the decline of biodiversity too.

Preserving biodiversity is now a major challenge and a priority. We have a moral responsibility to protect biodiversity and we must act quickly and decisively if we are to address the climate and ecological crisis.

What are the legal obligations for the University?

While legal compliance is not the primary driver for the development of our BAP it is, nevertheless, an important consideration.

The University's legal obligation to protect biodiversity is set out in the Natural Environment and Rural Communities Act (NERC). Section 40 requires all public bodies 'in exercising its functions, to have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.'

The Department for Environment, Food and Rural Affairs (DEFRA) have made it clear that "as universities and higher education bodies provide education on a not-for-profit basis and are in receipt of public funds, it is their view that there is a case that they fall within 'public authority' referred to in the NERC Act and therefore the Section 40 duty should apply."

The Wildlife and Countryside Act (1981) is the primary legislation that protects wildlife in the UK and sets out legal protections for species and habitats. The University must ensure that none of its ground's maintenance and development activities harm, kill or destroy the animal species, wild plants or habitats listed in the Act.



Red Admiral (*Vanessa atalanta*)

Putting the University of Sheffield BAP into context

The UK is a signatory of the international Convention on Biological Diversity. As a signatory, the Government must create and enforce national strategies and action plans to conserve, protect and enhance biological diversity.

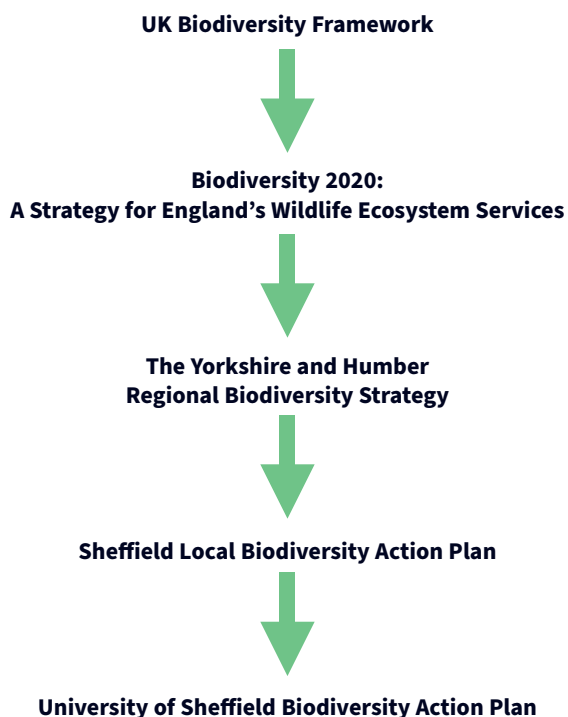
In 2020, the [Convention on Biological Diversity](#) began developing a new global biodiversity framework to guide actions worldwide through 2030. Known as the Kunming-Montreal Global Biodiversity Framework, it aims to preserve and protect nature and its essential services to people. The framework comprises four goals and 23 targets which act as steppingstones to 'living in harmony with nature' by 2050.

The [UK Biodiversity Framework](#), published in 2012, sets out how England, Scotland, Wales and Northern Ireland will meet strategic biodiversity goals, individually and collectively. The national strategy is delivered at the local level through a series of more regionally focused strategies **as the diagram below indicates**. The UK framework is supported by separate strategies for each administration, [Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services](#) was published in

2011 and sets out the strategic direction for biodiversity policy within England and builds on the successful work that has gone before.

The Yorkshire and Humber Regional Biodiversity Strategy, published in 2009, sets out a framework for the integration of biodiversity into regional and local policies and promotes a coherent approach to biodiversity in the region. Sheffield's Local Biodiversity Action Plan is the city's main mechanism for protecting important wildlife species and habitats and contributing to national targets.

The University of Sheffield BAPs fits within the context of these strategies and plans, taking forward any objectives that the University can contribute to as a series of practical steps to be implemented within the estate. It is likely that the national, regional and local biodiversity documents referred to above will be refreshed in the forthcoming years, and as these are published we will reflect on how our activities can contribute to wider local, regional and national biodiversity goals.



Ladybird (*Coccinelloidea spp*)

Our approach

The nature of the University's estate means that developing a BAP that has a focus on protecting and enhancing biodiversity through specific species and habitat action plans is not appropriate. Instead, we focus on a number of

broad themes (for example, amenity space and development projects) for which objectives and targets have been developed. Actions and timescales to achieve these targets and objectives have also been identified.



Peacock (*Aglais io*)

Description and evaluation of the University's green spaces

The term green space, when used in this document, refers to any part of the University estate where people can interact with and feel a connection to nature; these include conservation areas, large scale park like areas with a variety of features and smaller areas, for example, seating areas with planters, shrub beds or planted trees.

The University of Sheffield occupies an area of at least 40 ha across its city centre estate, two student residences (Endcliffe and Ranmoor) and Norton playing fields.

The University also has several large buildings and grounds at the Advanced Manufacturing Park in Catcliffe, and it is currently developing several new buildings on the Sheffield Business Park. Further afield, the University has research facilities at Harpur Hill in Buxton, a field station at Bradfield, and there are additional AMRC facilities in Blackburn and Chester.

The core of the University's estate is located in the south west of Sheffield. The geology of this part of the city is Carboniferous coarse sandstone or gritstone (sometimes known as millstone grit) with areas of irregular shale and thin coal. This is overlain by Pleistocene till – soft clays deposited by glacial melt-water from the beginning of the current interglacial period. This is also known as stagnogley soil or brown earths. Sheffield is situated at the confluence of five rivers; however the campus occupies a relatively high elevation (between 100m and 200m above sea level). Coupled with underlying geology this means that soils across Sheffield have a quick saturation rate and there is a lot of surface water run-off.

The current range of habitat types found within the estate is relatively limited to urban parkland habitats.

The maintenance regimes of these areas reflect the amenity value of the areas and the resources available. The three main habitat types present are:

- **Woodland**

There are various areas of woodland across the estate. Old Wood on the Ranmoor residence is particularly valuable as it is ancient semi natural woodland (ASNW) containing some planted specimens or non-native naturalised species. The majority of the canopy is oak (much of which is very old – 400-600 years), with beech, some ash and sycamore, particularly in the understorey. The Bradfield Environmental Centre also contains a dense and full woodland of mature trees in a rural exposed environment.

- **Formal lawns**

Formal lawns are managed by regular mowing; most areas are mowed weekly throughout the growing season and have limited biodiversity value.

- **Amenity grassland**

Formal lawns have been allowed to develop into amenity grassland through the adoption of relaxed maintenance regimes. The implementation of differential mowing has resulted in the development of floristic diversity in these areas that provides additional urban habitat.

Other habitat types present include:

- **Open still water**
The pond in Endcliffe residence is likely to be mesotrophic. Its clear waters support a variety of plant species, fish and avifauna. The margin is steep and of manmade origin and supports a variety of ferns. The inlet to this pond is a large underground reservoir under The Edge; the outlet runs down to the Porter Brook Valley before finally joining the River Sheaf. Built in the Victorian period and recently dredged, the pond is beginning to show signs of developing a more diverse invertebrate population and various species of aquatic plants. In 2021 Grass carp were introduced to the pond to biologically control aquatic vegetation.
- **Running water**
There is a small shallow stream in Ranmoor residence woodland, it is small in width and without pools and supports a population of invertebrates, but few, if any, aquatic plants.
- **Tall ruderal/scrub mosaic**
The once formally planted beds, adjacent to Old Wood, have been left to go wild. Originally planted with a mixture of native scrub species (such as hawthorn (*Crataegus monogyna*) and hazel (*Corylus avellana*)), and with non-native *Ribes* species; they now host a mixture of grass species including Yorkshire fog, common bent and fescue grasses, with other plants such as black medic and wild teasel.
- **Stone walls**
There are many stone walls across the estate which provide habitat for nesting birds, plant species usually associated with cliff faces, and fern species.
- **Perennial wildflower turf**
Since 2018 perennial wildflower turf has been introduced across the estate. A number of turf mixes have been planted – these are specifically chosen to reflect the use of the green space. All of the turf mixes chosen require minimal maintenance and support biodiversity.
- **Planted formal shrub beds**
These are found around some buildings and car parks across the site. The planting in the shrub beds usually consists of ornamental species including *Berberis*, *Lonicera*, *Hypericum* and other flowering plants such as hellebores, *Bergenia* and *Crocsmia*, with ground cover plants such as *Pachysandra* and *Vinca minor*. The majority of these beds require high maintenance – they are hand weeded and mulched with bark mulch. Since 2019 there has been a 50% decline in these areas as the new planting scheme has been introduced.
- **Biodiverse beds**
Since 2019, several beds have been planted with a specific mix of plants that specifically aims to support urban biodiversity whilst at the same time creating a unique identity.
- **Bare ground**
This important habitat occurs under dense tree canopies, as well as disturbed areas. It provides an important habitat for some invertebrate species and a feeding area for birds.
- **Buildings**
The many buildings across the estate provide potentially valuable nesting and roosting habitat for both bats and birds, for example, peregrines roost and have nested on a platform erected on St Georges Church. The University's buildings built before 1950 provide more nesting and roosting opportunities for birds, bats and invertebrates than those built after.
- **Single planted trees**
There are approximately 400 specimens spread across the estate, many still immature.
- **Immature and mature hedgerows**
Much of the mature hedgerow on the University's estate is beech or privet which can be found around the older properties at Endcliffe residence. However, the newer hedges planted between 2010 and 2012 are either single species or a mix of hawthorn and blackthorn with other species, the latter being of much higher biodiversity value. One such example can be found around the top of the bankside adjacent to the large pond on the Endcliffe residence.
- **Green roofs**
The University has nine green roofs across its campus – Arthur Willis Environment Centre, The Ridge, Jessop West, SITraN, Humanities Research Institute, Soundhouse, ICOSS, Regent Court and Sir Robert Hadfield Building.



Review of the University of Sheffield Biodiversity Action Plan 2017–2022

Overall, the University of Sheffield's second BAP, which covered the period 2017 – 2022, has been successful. We have built on the success of our original BAP and made considerable progress in improving the quality of our estate. The steering group has been fundamental to the success and the delivery of the objectives and actions. Membership of the group includes representatives from Estates and Facilities Management, Accommodation Services, Sport Sheffield and the Department of Landscape. The group meets periodically to take action and monitor progress against objectives and targets.

Trees

In 2020, we published our [Tree Management Strategy](#). The strategy not only sets out our long-term vision in the management of our tree resources, it also sets out our aims, objectives and describes our medium term plans.

Over the next 30 years our vision is to develop a tree and woodland resource across the whole campus which is valued, enhanced and managed sustainably. To maximise the benefits of our trees and woodlands for wildlife and people we will identify and appropriately manage any threats from pests and diseases and mitigate the impact of the changing climate on our trees and woodlands.

The University has over 10,000 trees across campus and each and every tree is a positive asset to the organisation. Our trees vary in age, species and variety, and our priority is to prolong the life of our trees and only undertake tree works as a last resort. Recent improvements to our tree management practices include companion planting and 'planting for the future', a practice which involves planting replacement trees before the vitality of the previous tree declines, thus ensuring there are always mature trees across our estate.

Development

Our 2017 BAP identified the need to develop and implement a Sustainable Building Standard, which we published in 2018. The standard included an objective of achieving a net positive contribution to biodiversity and has subsequently undergone annual reviews with more significant interventions noted in 2021. The reviews followed a visible step change in impetus in sustainable development across the UK from bodies such as Royal Institute of British Architects.

Surveying and monitoring

In 2019 the Biodiversity Steering Group appointed a final year student to develop criteria to assess the biodiversity value of the estate and then undertake an audit to assess the estate. 40 city centre green spaces were assessed and a number of recommendations were made to improve the biodiversity value of those that were identified as having a low value for

biodiversity. In 2021 a recent graduate was appointed to build on this project by undertaking an assessment of the connectivity of these spaces. The final report included several recommendations to ensure that existing pockets of green space are connected with functional corridors to allow populations to reconnect and migrate into habitat that was previously unavailable to them.

Management plans

During the first iteration of our BAP, the Biodiversity Steering Group produced management plans for Belgrave woodland, the two student residences and Norton playing fields. These plans set out the University's long term vision, and aims and objectives for each of the sites. These plans were reviewed and updated in 2021 and a fifth management plan was developed for Bradfield Environmental Centre.

Amenity space

Following the first published BAP the grounds maintenance schedules were reviewed to ensure that our green space is maintained sympathetically to the needs of biodiversity; for example cutting frequencies were reduced in certain areas of student residences and main campus, allowing these areas to develop into floristic grassland. In the second edition of the BAP we focused very much on improving the quality of our green space. We aimed to create a university identity through the development of a unique palette of plants. The plants chosen for this palette were high impact and low maintenance and support our sustainability aspirations.

We began by implementing this new planting scheme as we redeveloped our public realm spaces, this significantly increased both the area and quality of green space around our city centre campus. Since 2019 our focus has been on renovating existing green spaces and developing pocket parks in previous hard standing areas, thus further increasing our area of green space across the university estate.

Student and employee engagement

Engagement with both students and staff is a key aspect of our BAP. We proactively use our campus as an educational resource, for example teaching students about habitat survey techniques – such as undertaking tree, birds and wildflower surveys, and using the information to develop environmental management plans.

Engagement activities at the residences have included educational walks, bulb, tree and hedge planting, hedgehog related improvements, the development of planting areas for vegetables and flowers, and foraging groups.

The recent pandemic meant that Landscape Services have not been able to offer engagements activities on campus as they have done in previous years, however departments have been proactively approaching the team to explore opportunities to improve student and staff well-being through our green space.

Action Plans

Amenity space

Introduction and description

Almost all of the green space found on our estate can be described as amenity space (apart from the woodland/conservation areas). They have been established to improve the visual amenity of university buildings or to provide areas for relaxation, recreation, learning and social well-being.

Around the city campus, which includes Broad Lane Court, St. George's Church, Goodwin Sports Centre and all the other buildings that form the city centre estate, much of the green space is mixed with hard landscaping around buildings. These spaces consist of small grassed areas, shrub beds and tree pockets.

The residences provide recreational and amenity space for students. The green space at these locations consists of grassed areas, mature woodland areas, single trees, hedgerows, and shrub beds forming a parkland type environment with edible gardens.

The management of these amenity areas consists of seasonal appropriate mowing regimes and hand weeding. Hedges are cut annually and plants and trees are replaced as necessary. The University has a longstanding policy to minimise the use of herbicides; glyphosate is only used on hard standing areas, knotweed eradication and in the preparation of wildflower areas. Another long standing policy of the University is not to use soil amelioration products that contain peat in our grounds maintenance activities.

Several of the University's newer buildings have green roofs that provide multi season nectar sources for insect pollinators. These roofs are a mix of sedum roofs, sedum and wildflower roofs and roofs that are used for research purposes. Management of these roofs includes regular checks, and leaf clearing in the autumn to prevent smothering.

The University estate supports a significant number of trees and woodland blocks. The estimated total number of individual trees is over 10,000, all of which are surveyed regularly for condition and health. Following these surveys, safety work is carried out where necessary. Where possible branches are left on site to create habitat piles, and when material has to be removed it is disposed of sustainably. There is also a policy for rolling replacement, meaning that when a tree is removed it is replaced by a tree of the same species or one more suitable for the ecological profile of the area.

Opportunities

Our focus on improving our Public Realm has enabled us to improve our amenity spaces through thoughtful innovative design and the adoption of planting schemes that supports biodiversity.

There are opportunities to improve the remainder of the University's amenity space on campus, and by improving the quality of the remaining amenity space and looking for opportunities to increase our net area of green space we aim to create a mosaic of connected habitats across the city centre estate in innovative ways.

Objectives

ASO1	Connect our existing city centre green spaces through the development of additional habitats and functional corridors, for example pocket parks and additional tree planting.
ASO1	Create and maintain balanced habitats that benefit a wide range of plants and animals.
ASO1	Ensure that our landscape maintenance activities use the minimum amount of water.
ASO1	To eliminate peat entirely from our in-house ground's maintenance activities (peat is currently used at the University's plant nursery).

Targets

AST1	Replant all formal beds (except Firth Court) across the city centre with the biodiverse planting scheme by 2028.
AST1	Evaluate the campus for its ecological value for keystone species, e.g., bumble bees, swifts and voles and set improvement targets.
AST1	Reduce the amount of potable water used to water plants by 2025.
AST1	Phase out the use of peat by 2024.

Actions		Lead	Deadline
ASA1	Continue to replace formal planted beds with the University's biodiverse planting scheme.	Landscape services	2028
ASA2	Appoint a 100 hours project student to evaluate the ecological value of the campus and undertake an assessment of the effectiveness of various techniques that can be used to link the existing green space for our keystone species.	Environment and IMS Manager	2024
ASA3	Identify areas that can be managed less intensively to create additional habitats for hedgehogs and species.	Landscape services	2024
ASA4	Quantify the area of green space across the city campus and create a baseline to report future increases in total area / biodiversity gain.	Environment and IMS Manager	2023
ASA5	Develop a policy that sets out our approach to water management in relation to our grounds maintenance activities.	Landscape services	2024
ASA6	Explore ways to reduce mains water to maintain sports playing areas.	Landscape services	2025
ASA7	Develop a management plan for the green space at Goodwin Sports Centre.	Landscape services	2025
ASA8	Develop a policy around the purchase of trees that specifies trees must be UK grown.	Landscape services	2023
ASA9	Reduce our use of annual bedding plants in our planting schemes.	Landscape services	2027
ASA10	Trial alternatives to peat based growing medium at the plant nursery.	Landscape services	2024
ASA11	Install nesting and roosting features on existing buildings and mature trees to create biodiverse corridors across campus.	Landscape services	2027



Student and staff engagement

Introduction and description

Like previous editions, one of the key objectives of this BAP is to capitalise on the wider benefits of biodiversity, specifically to create biologically diverse green spaces that will also provide health and psychological benefits to those that come into contact with them.

Engaging students and staff with the University's green estate through a range of activities, from active engagement (e.g., through volunteering on practical conversation projects) to passive engagement (e.g. using the University's green space to relax and enjoy the sun at lunch times) will encourage individuals to connect with nature on a more personal level and benefit from improved health and well-being.

The benefits of engagement are not confined to improving health and well-being. Engagement will help to foster a sense of ownership, engender a sense of community across the University and promote stewardship of our estate, particularly at the student residences where green space is used as social space.

The University's estate also offers opportunities for engagement both through formal education and life-long learning; motivating individuals into pursuing related careers, professions and hobbies or simply inspiring people to create biodiverse areas in their own gardens and allotments.

Opportunities

Initiatives can be identified and undertaken to increase engagement as opportunities arise. The University is committed to creating opportunities for students and staff to participate in seasonal maintenance tasks (for example bulb planting, tree planting) and will respond to specific requests from departments as they identify opportunities for small scale improvements and engagement as staff resources allow and suitable tasks are planned and identified.

Objectives			
SSEO1	Support well-being through our green spaces.		
Targets			
SSET1	Improve accessibility to green spaces for students and staff.		
SSET2	Run three student and staff horticultural based well-being events per year.		
Actions		Lead	Deadline
SSEA1	Ensure seating areas are included in designs as green spaces are developed.	Landscape Services	Ongoing as opportunities arise
SSEA2	Work with students and staff at the residences to encourage greater engagement with green spaces to improve well-being.	ACS Residence Life	Ongoing as opportunities arise
SSEA3	Create and publish a green space well-being map of the estate.	Landscape Services	2025
SSEA4	Refurbish the outside area for the Student Mental Health, Counselling and Therapies Service so that it can be used as outdoor counselling space.	Landscape Services	2023

Incorporating biodiversity into University developments

Introduction and description

Biodiversity can be integrated with development, and it is possible to develop buildings, infrastructure and urban spaces that provide opportunities for biodiversity. However, this can only be achieved by thoughtful design that is considered from the very first stages of project planning.

The underlying philosophy of effective biodiversity and development policies is based on three principles – integral design, mitigation and adding value. Developments that are well designed utilise the landscape effectively, provide habitat for wildlife, have significantly lower energy loads, produce less waste and improve the health and well-being of building users.

Opportunities

The University’s ongoing development across the estate means there are opportunities to integrate biodiversity into developments and to restore and create habitat.

Collaboration between Council planning departments, architects, project managers and the biodiversity steering group at an early stage can ensure that innovative and progressive ideas are included in designs and that exemplar buildings that benefit future site users and increase the overall biodiversity value of the site are realised.

Our target for 2023 is to implement our core carbon reduction refinements and enhance our commitment to delivering healthy and productive environments, which includes a net positive contribution to biodiversity.

Objectives			
UD01	Create a net positive contribution to biodiversity.		
Targets			
UDT1	Where applicable ensure that new builds and large refurbishments are designed to accommodate biodiversity.		
UDT2	Investigate nature based solutions to reduce building running costs and construction costs.		
Actions		Lead	Deadline
UDA1	Ensure that external landscape architect teams incorporate street trees when designing plans of hard standing areas across the city campus.	Head of Estates Development	Ongoing as the opportunities arise
UDA2	Develop a landscape design and management specification that sets out the University’s requirements for design teams.	Landscape Services	2026
UDA3	Incorporate nesting and roosting features into new builds and major redevelopments.	Head of Estates Development	Ongoing as the opportunities arise
UDA4	Implement the Sustainable Building Standard.	Head of Estates Development	2024
UDA4	Monitor and report on the net increase in the quality of green space delivered through university development projects.	Head of Estates Development	Annually

Surveying and monitoring

Introduction and description

Initial surveys are necessary to identify and document the existing biological baseline; this provides the information that is critical to ensure that targets and actions focus on areas that have more value ecologically or species that, for various reasons, require special attention. Monitoring (repeat surveys) is also important as it allows the success or failure of projects to be reviewed.

Baseline data for habitat types, birds, mammals, and invertebrates have been obtained for Endcliffe and Ranmoor residences, Norton playing fields and Bradfield Environmental Research Centre. The information was used to develop the subsequent management plans for these sites. More recently an audit of the biodiversity value and connectivity of the city centre campus was undertaken.

Opportunities

A structured system of surveying and monitoring will allow the University to both monitor progress against targets set out in this document and report on contributions it has made to local, regional and national BAPs. Some species surveys do not need to be conducted by professional ecologists – these surveys can be carried out by our students in related fields of study, doubling up as learning opportunities to develop employability skills.

Objectives

SMT01	Ensure that we understand the ecological value of our estate and proactively take opportunities to improve it.
SMT02	Monitor the effectiveness of our actions on local biodiversity.

Targets

SMT1	Increase the biological data records that are currently held by the University.
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Actions		Lead	Deadline
SMA1	Create and develop an integrated mapping system that includes results from ecological surveys across the estate.	Environment and IMS Manager	2024
SMA2	Identify and commission repeat surveys to assess the effectiveness of management practices and activities.	Environment and IMS Manager	Ongoing as necessary
SMA3	Develop and deliver basic field identification skills training to Landscape Services colleagues.	Landscape Services	2023
SMA4	Develop a biodiversity key performance indicator to document the continuous improvements to the green spaces across campus.	Landscape Services	2023
SMA5	Appoint a 100 hours project student to undertake an audit to assess the biodiversity value and connectivity of the green spaces at Endcliffe and Ranmoor residences.	Environment and IMS Manager	2024

Hedgehogs as a flagship species

Introduction and description

Hedgehogs are classed as vulnerable to extinction in Britain. Fragmented habitats, physical barriers, road mortalities, and a lack of prey and nesting material have caused massive declines and it is now thought that there are fewer than one million hedgehogs left in Britain. However, the [State of Britain's Hedgehogs report](#) shows linking up habitats and providing feeding and nesting areas can stabilise and even lead to recovering populations in urban environments like our campus.

Hedgehogs are considered an indicator species; their presence or absence reflects the health of an ecosystem. A healthy hedgehog population indicates the plentiful supply of invertebrates and diverse and connected habitats, and ecosystems that are healthy support other species as well as hedgehogs. This, combined with the public's affection for hedgehogs, makes them an excellent flagship species: one that is selected to act as an ambassador, icon or symbol for a defined habitat, issue, campaign or environmental cause.

The [Hedgehog Friendly Campus scheme](#) aims to encourage schools and universities to adopt management practices that protect hedgehogs from hazards on campus, replace and enhance habitats and raise awareness within the community. The University has been involved in the Hedgehog Friendly Campus scheme since 2018.

Repeated surveys undertaken by the Hedgehog Friendly Campus team have shown the presence of hedgehogs in Weston Park, meaning that local populations of hedgehogs will benefit from any actions we undertake to improve our green spaces, protect them from harm and engage with both our employees and students.

Opportunities

Our large and widespread city campus provides many opportunities to take proactive measures to support hedgehogs and other wildlife. Hedges provide cover for hedgehogs and birds such as bullfinches, robins and song thrushes, as well as many mammal species which in turn provides food for birds of prey like sparrowhawks. Wildflower meadows encourage butterflies and other invertebrates, whose larvae are a valuable food source for not only hedgehogs but also birds and the many small mammals we have found on campus. Unmown and scrub areas give cover to overwintering invertebrates and in turn feed hedgehogs and other mammals. Finally, biodiverse beds provide both potential habitat and feeding sites for urban wildlife throughout the year.

Since 2018 we have been working with the Hedgehog Friendly Campus team and have installed hedgehog houses and signs on campus. We are keen to build on these improvements over the forthcoming years and, working collaboratively with the Hedgehog Friendly Campus team, we aim to deliver positive outcomes for hedgehogs across campus. Opportunities include supporting the Hedgehog Friendly Campus team with their awareness raising and surveying activities and ensuring that our ground maintenance activities support hedgehog populations.

Objectives			
HO1	Increase suitable habitat for hedgehogs and other urban species.		
Targets			
HT1	Hedgehogs found to be using nest boxes or feeding stations at the residences.		
HT2	Assess hedgehog and other mammal populations across the campus through in-depth presence / absence surveys.		
Actions		Lead	Deadline
HA1	Undertake a hedgehog survey across campus and develop a map of results.	Hedgehog Friendly Campus team	2024
HA2	Install nest boxes, log piles and feeding stations in appropriate areas (as identified through survey).	Landscape Services	2026
HA3	Explore alternatives to bait boxes to manage pests.	Estates and Facilities Management	2029
HA4	Review the University planting list to ensure that it specifically supports hedgehogs.	Hedgehog Friendly Campus team	2024
HA5	Ensure ecological surveys associated with the construction of new developments account for hedgehogs and propose recommendations to mitigate harm and enhance the site for hedgehogs.	Head of Estates Development	2024

AMRC Campus and Sheffield Business Park

Introduction

Both the AMRC Campus and Sheffield Business Park are located in Northeast Sheffield just off the M1 between Rotherham and Sheffield. The AMRC campus is in Waverley to the south of the A630, while Sheffield Business Park is located to the north side of the A630 in Tinsley.

The AMRC Campus is located on the former Orgreave colliery. Coal was first mined in the area in the middle of the 19th century and came to an end 170 years later in 1981. In 1995 British Coal Opencast began restoring the tip of the colliery and the land has subsequently been redeveloped into what has now become known as Waverley.

Since developing the first building in 2001 (the Advanced Manufacturing Research Centre, a collaborative venture between the University of Sheffield and Boeing), the AMRC campus has grown considerably and now consists of seven buildings and associated green space.

The landscaping around the AMRC Campus consists of sustainable urban drainage systems (drainage ditches and swales) and planting that includes a mixture of both native and non-native trees, hedging (beech, holly and hawthorn) and amenity planting.

The Sheffield Business Park is located on the former Sheffield City Airport. The site was agricultural, until the mid-20th century, when a railway was built along the north-western corner of the site to service the colliery. The railway cutting was backfilled when the airport was developed. The airport opened in 1997 and closed in 2008 and the University developed its first building (Factory 2050) in 2015. The University now has eight buildings located at the building park. The landscaping at this location also includes sustainable urban drainage systems (drainage ditches and swales), while the planting includes a mixture of non-native birch and English oak trees, holly hedging, ornamental grasses and a wildflower meadow.

Originally the grounds maintenance at both the AMRC campus and Sheffield Business Park had been contracted to an external supplier, however in 2017, the University's Landscape Services team took on responsibility for managing the Sheffield Business park site and the AMRC site, which will ensure that these spaces are managed to the same high standards as the green space on main campus and at the residences.

Objectives

AMRCO1	To develop good quality, ecologically structured and diverse habitat on site
AMRCO2	To develop and manage the green space to the same biodiversity standards as the main campus

Targets

AMRCT1	Establish the existing and potential biodiversity value at the AMRC Campus and Sheffield Business Park.
AMRCT2	Develop a structured approach to communicating our biodiversity improvements at the AMRC Campus and Sheffield Business Park.

Actions		Lead	Deadline
AMRCA1	Obtain baseline information – Phase 1 Survey, tree surveys, hedgehog surveys and bird surveys.	Environment and IMS Manager	2025
AMRCA2	Liaise with colleagues at the AMRC to agree objectives and targets for biodiversity improvements.	Environment and IMS Manager	2026
AMRCA3	Write and publish a five-year management plan for AMRC Campus and Sheffield Business Park.	Landscape Services	2027

Linked strategies policies and initiatives

The University has developed several policies and strategies that have clear links with the BAP which are summarised below.

University of Sheffield Sustainability Strategy

The University aims to become one of the most sustainable research-intensive universities in the country and will align our research, teaching and campus to ensure sustainable practice across everything we do. We have committed to becoming net carbon neutral on campus by 2030 and across all activities by 2038 and have developed an action plan that sets out our pathway to achieving our ambitions. Our Sustainability Strategy strengthens our commitment to protecting and managing our green space and trees, now and for future generations.

Tree Management Strategy

Published in 2020, our Tree Management Strategy only sets out our long-term vision for the management of our tree resources. The strategy provides a point of reference for Estates and Facilities Management (EFM) and University stakeholders to allow us to make informed decisions and establish a clear and structured approach to the management of trees in Sheffield. This document is divided into two parts:

1. Strategic vision and framework – This part sets out the University's overall strategic vision, the framework of the strategy and our key challenges
2. Action plan – This part sets out our plans to improve our tree resources; it describes what actions we intend to take and provides timescales and responsibilities.

Japanese Knotweed management reports

The University understands its obligation to control the spread of this highly invasive species and is committed to its proactive removal/eradication across the estate. Approximately 2,000m² of the University's land is affected by Japanese Knotweed. The most significant area of infestation is at Norton playing fields. Each affected area is reported, treated and monitored in site specific reports which outline the management plan and contain records for treatment. Each of these reports is conducted in line with the Environment Agency code of practice. Part of each plan is to reinstate and repair vegetation and improve habitats in those sites where the presence of Japanese Knotweed and its subsequent treatment has adversely affected native flora.

University of Sheffield tree surveys

The University accepts its responsibility to maintain and keep its trees and woodland areas to a high standard for both recreation and conservation value. The University's 10,000 trees are regularly surveyed and their current state, size and condition are documented and mapped. The surveys are primarily undertaken to prevent damage, identify dangerous trees and aid in planning arboriculture work over a three year period. Where trees are necessarily removed, the University has a policy of replacing two for one; replacement trees are the same species as those felled or species more suitable to the ecological profile of the area and have a stem girth of at least 6cm.

Hedgehog Friendly Campus

Hedgehog Friendly Campus is a British Hedgehog Preservation Society initiative that encourages Universities, FE colleges and schools to make impactful changes for hedgehogs. Participating organisations can work towards Bronze, Silver or Gold levels. The University has actively participated in the scheme since 2018.



Appendix 1 – Complete list of actions

Ref	Action	Lead	Deadline
UDA4	Monitor and report on the net increase in the quality of green space delivered through university development projects.	Head of Estates Development	Annually
SMA2	Identify and commission repeat surveys to assess the effectiveness of management practices and activities.	Environment and IMS Manager	Ongoing as necessary
SSEA2	Work with students and staff at the residences to encourage greater engagement with green spaces to improve well-being.	ACS Residence Life	Ongoing as opportunities arise
SSEA1	Ensure seating areas are included in designs as green spaces are developed.	Landscape Services	Ongoing as opportunities arise
UDA3	Incorporate nesting and roosting features into new builds and major redevelopments.	Head of Estates Development	Ongoing as the opportunities arise
UDA1	Ensure that external landscape architect teams incorporate street trees when designing plans of hard standing areas across the city campus.	Head of Estates Development	Ongoing as the opportunities arise
SMA3	Develop and deliver basic field identification skills training to Landscape Services colleagues.	Landscape Services	2023
SMA4	Develop a biodiversity key performance indicator to document the continuous improvements to the green spaces across campus.	Landscape Services	2023
SSEA4	Refurbish the outside area for the Student Mental Health, Counselling and Therapies Service so that it can be used as outdoor counselling space.	Landscape Services	2023
ASA4	Quantify the area of green space across the city campus and create a baseline to report future increases in total area / biodiversity gain.	Environment and IMS Manager	2023
ASA8	Develop a policy around the purchase of trees that specifies trees must be UK grown.	Landscape services	2023
HA1	Undertake a hedgehog survey across campus and develop a map of results.	Hedgehog Friendly Campus team	2024
HA4	Review the university planting list to ensure that it specifically supports hedgehogs.	Hedgehog Friendly Campus team	2024
HA5	Ensure ecological surveys associated with the construction of new developments account for hedgehogs and propose recommendations to mitigate harm and enhance the site for hedgehogs.	Head of Estates Development	2024
SMA1	Create and develop an integrated mapping system that includes results from ecological surveys across the estate.	Environment and IMS Manager	2024
SMA5	Appoint a 100 hours project student to undertake an audit to assess the biodiversity value and connectivity of the green spaces at Endcliffe and Ranmoor residences.	Environment and IMS Manager	2024
UDA4	Implement the Sustainable Building Standard.	Head of Estates Development	2024
ASA2	Appoint a 100 hours project student to evaluate the ecological value of the campus and undertake an assessment of the effectiveness of various techniques that can be used to link the existing green space for our keystone species.	Environment and IMS Manager	2024
ASA3	Identify areas that can be managed less intensively to create additional habitats for hedgehogs and species.	Landscape services	2024
ASA5	Develop a policy that sets out our approach to water management in relation to our grounds maintenance activities.	Landscape services	2024

ASA10	Trial alternatives to peat based growing medium at the plant nursery.	Landscape services	2024
AMRCA1	Obtain baseline information – Phase 1 Survey, tree surveys, hedgehog surveys and bird surveys.	Environment and IMS Manager	2025
SSEA3	Create and publish a green space well-being map of the estate.	Landscape Services	2025
ASA6	Explore ways to reduce mains water to maintain sports playing areas.	Landscape services	2025
ASA7	Develop a management plan for the green space at Goodwin Sports Centre.	Landscape services	2025
AMRCA2	Liaise with colleagues at the AMRC to agree objectives and targets for biodiversity improvements.	Environment and IMS Manager	2026
HA2	Install nest boxes, log piles and feeding stations in appropriate areas (as identified through survey).	Landscape Services	2026
UDA2	Develop a landscape design and management specification that sets out the University's requirements for design teams.	Landscape Services	2026
AMRCA3	Write and publish a five-year management plan for AMRC Campus and Sheffield Business Park.	Landscape Services	2027
ASA9	Reduce our use of annual bedding plants in our planting schemes.	Landscape services	2027
ASA11	Install nesting and roosting features on existing buildings and mature trees to create biodiverse corridors across campus.	Landscape services	2027
ASA1	Continue to replace formal planted beds with the University's biodiverse planting scheme.	Landscape services	2028
HA3	Explore alternatives to bait boxes to manage pests.	Estates and Facilities Management	2029



The Biodiversity Action Plan was originally written by Calum Ryan and Charlotte Winnert, and subsequently reviewed and updated by the Biodiversity Steering Group.

The working group consisted of

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