



The
University
Of
Sheffield.

Biodiversity Action Plan.

Foreword

Our take on corporate social responsibility is straightforward: we're trying to make things better; our objective is to ensure that we operate in a sustainable way and minimise our impact on the environment.

Biodiversity is key to the survival of life on Earth; unfortunately human activities over the last 100 years have placed increasing pressures on the environment and biodiversity. This Biodiversity Action Plan provides a framework for action to help us achieve our goals – to protect and enhance biodiversity both on the University campus and within the city for this and future generations.

Professor Rebecca Hughes

Pro-Vice-Chancellor International

Chair of the Corporate Social Responsibility Group



Introduction

The University of Sheffield, as an environmentally responsible organisation, has made a clear commitment to reducing and managing its' environmental impact. The University owns and manages a significant area of green space and this Biodiversity Action Plan (BAP) has been developed to identify opportunities to protect and enhance the biodiversity value of the University's estate.



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 coal and 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 wellbeing.

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

What are the threats to biodiversity?

Biodiversity is under threat, both globally and nationally, and preserving it is a now major challenge. Biodiversity has declined significantly in the UK over the last century, for example

97% of species-rich grasslands have been lost since 1930;

76% of native butterfly species have declined since 1970;

70% of marine fish stocks are at unsustainable levels;

and there has been a

52% decline in Farmland bird populations since 1970;

50% or more decline of once common species such as the hedgehog, house sparrow and common toad in the last 25 years.

Source: Natural England.

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 main factor in the decline in biodiversity. While environmental pollution, specifically water pollution, air pollution and climate change have also played a significant role.

Legal obligations for public bodies

While legal compliance is not the primary driver for the development of this biodiversity action plan, 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), which came into force on 1 October 2006. 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'.

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 there is a case that they fall within 'public authority' referred to in the NERC Act and therefore the section 40 duty should apply*'.



Bumble bee (*Bombus spp*)

Putting the University of Sheffield BAP into context

The UK is a signatory of the International Convention on Biological Diversity. As signatories the Government must create and enforce national strategies and action plans to conserve, protect and enhance biological diversity. The *UK Biodiversity Action Plan* describes the United Kingdom's biological resources and provides detailed plans for the protection of these resources. The UKBAP highlights 1,150 priority species and 65 priority habitats, and contains action plans to aid their recovery (JNCC, 2012).

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 & ecosystem services*, was published in 2011. *The Yorkshire and Humber Regional Biodiversity Strategy* has been developed by The Yorkshire and Humber Biodiversity Forum and represents the regions contribution to the England Biodiversity Strategy and the UK Biodiversity Action Plan. It 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 Sheffield LBAP was first produced in 2002 by the Sheffield Biodiversity Steering Group - a partnership between Sheffield Wildlife Trust, Sheffield City Council, Natural England, Sorby Natural History Society and other partners.

The University of Sheffield Biodiversity Action Plan fits within the context of these BAPs, taking forward any objectives that the University can contribute to as a series of practical steps to be implemented within the estate.

Our approach

The University of Sheffield has approached the production of this document differently to contemporary models. Rather than focussing on the traditional format of Habitat Action Plans and Species Action Plans this document will focus on a range of themes through which biodiversity can be improved, for example, amenity planting and development projects. Objectives and targets have been developed for each theme; and corresponding actions and timescales to achieve these targets have been identified.

The delivery of the BAP is managed by a steering group, the membership of which includes representatives from the Environment Team, Landscape Services, Estates Development, Accommodation and Commercial Services, the Department of Landscape and the Students' Union. The group meets periodically to assess, review and plan the production of the document, and to monitor progress against objectives and targets.

The biodiversity action plan is sponsored by the Corporate and Social Responsibility Group; and the BAP steering group reports annually on progress to the group.

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 urbanites have with the natural world and biodiversity are in public green spaces.

A key objective of the University of Sheffield BAP is to capitalise on these wider benefits in order to improve our estate, not only for biodiversity, but also for our employees, students and visitors alike.

What is the University's vision?

The University is committed to maximising the ecological value of its 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 improve the biodiversity value of the existing estate and to contribute, where possible, to local, regional and national biodiversity targets. We hope to "re-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, employees and other users of the university estate.

The University's specific objectives are to

- Ensure that a greater emphasis is placed on opportunities to increase and improve biodiversity in university developments,
- To develop good quality, ecologically structured and diverse habitat in appropriate locations,
- To break down the barriers between green and grey space on the existing estate,
- To engage with and educate students, employees and other interested parties,
- To provide opportunities for field work for students,
- Ensure compliance with section 40 of the NERC Act.



Small tortoise shell (*Aglais urticae*)

Biodiversity improvements prior to the development of the biodiversity action plan

Prior to the development of this biodiversity action plan, the University had been making improvements for biodiversity across the estate. For example the University has a longstanding policy to minimise the use of herbicides across the estate; glyphosate is only used on footpaths, hard standing areas and for knotweed eradication. Another long standing policy of the University is not to use soil amelioration products that contain peat.

Habitat improvements have included the development of two small wildflower areas at the student residences which have provided nesting and hunting / foraging habitat for birds. A nesting platform was erected on St George's Church in 2010, and after alterations to the platform a pair of peregrines (the first inner city pair in Yorkshire) successfully bred in 2012.

While habitat improvements have been implemented as the opportunities arise, the 5,500 trees on the estate are managed proactively. They are regularly surveyed and any that are removed are replaced in the early winter as part of the annual tree planting programme.

Green roofs are an area of specialist research within the University, consequently many buildings the University has built since 2005 feature intentionally vegetated green roofs; additionally some existing buildings, with suitable structures, have been retro fitted with green roofs and by 2012 the University had nine green roofs.



St George's Church

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 and two student villages, in addition the University owns playing fields at Norton and a small area of woodland (donated to the University some years ago) at Belgrave Road in Ranmoor.

Further afield, the University has several large buildings and grounds at the Advanced Manufacturing Park in Catcliffe, research facilities at Harpur Hill in Buxton, and a field station at Bradfield. These areas have not been specifically considered in this edition of the BAP, however it is intended to include them in future editions.

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), this coupled with underlying geology means that soils across Sheffield have a quick saturation rate and there is a lot of surface 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 two main habitat types present are:

- **Woodland** – The various areas of woodland across the site pre-date the building of the residential villages. Old Wood in the Ranmoor Village and Belgrave Road woodland are particularly valuable as they are ancient semi natural woodland (ASNW) containing some planted specimens or non-native naturalised species. The majority of the canopy in these woodlands is oak (much of which is very old – 400-600 years), with beech, some ash and sycamore, particularly in the understorey.
- **Amenity grassland** – Grassland on site is managed by regular mowing; most areas are mowed weekly throughout the growing season. These areas are either semi-improved or improved and have limited biodiversity value at the moment.



Wildflower area on the Endcliffe Village

Other habitat types present include:

- **Open still water** – The pond in Endcliffe Village 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 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.
- **Running water** – There is a small shallow stream in Ranmoor woodland and another in Belgrave Road woodland. The two streams have similarities – they are both in woodland sites, they are small in width and without pools. Both support populations 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. There is an excellent example of this in the Belgrave Road woodland, where the southern wall supports numerous ferns, and has plenty of nest holes.
- **Newly planted wildflower and meadow grass areas** – These areas were sown in the autumn of 2011. They have been planted with a mix of wildflower and grass species such as cowslip (*Primula veris*), greater knapweed (*Centaurea scabiosa*), common primrose (*Primula vulgaris*), wild carrot (*Daucus carota*), annual meadow grass (*Poa annua*) and yorkshire fog (*Holcus lanatus*).
- **Planted formal shrub beds** – These are found around buildings and car parks across the site. The planting in the shrub beds usually consists of ornamental species. Common species found include *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.
- **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. These areas can be found where recent disturbance has occurred so move with ongoing work, while permanent locations include areas under dense canopy such as the beeches at Ranmoor Annexe.
- **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 George's Church. The University's buildings pre-dating 1950 have a greater ecological importance than those built after.
- **Single planted trees** – There are approximately 400 specimens spread across the estate, many of these are 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 Village. 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. Once such example can be found around the top of the bankside adjacent to the large pond on the Endcliffe Village.
- **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. Many of which, not only provide services for biodiversity within the city, but also provide both research and teaching opportunities for academic departments.

Black Walnut (*Juglans nigra*)

Action Plans

Amenity space

Introduction and description

Almost all of the green space found on the 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.

Around the city campus, where most of the buildings are used for teaching and research, much of the green space is mixed with hard landscaping. These spaces consist of small grassed areas, shrub beds and tree pockets.

The green space at the residential sites provides opportunities for recreation and amenity space for the student residents; it consists of grassed areas, mature and densely wooded areas, single trees, hedgerows, shrub beds and edible gardens.

The management of these amenity areas consists of weekly mowing regimes and hand weeding. Hedges are cut two or three times a year, and plants and trees replaced as necessary.

Nine of the University's buildings have green roofs. Some of which are sedum roofs and others are wildflower areas, both provide nectar sources for insect pollinators throughout the growing season. The management of these roofs includes regular checks, seeding or replanting when necessary and leaf clearing in the autumn to prevent smothering.

The University estate supports just over 5,500 trees; all of which are surveyed annually/biennially for condition and any safety works identified as necessary are carried out. Where possible, pruned material is kept in situ and used to create habitat piles. When it is necessary to remove prunings, they are sent for composting off site. It is University practice to replace all trees that have been felled with either a tree of the same species or one more suitable for the ecological profile of the area.

Opportunities

These areas currently support some wildlife; however there are opportunities to improve the ecological value of these areas, whilst maintaining its primary function as amenity space. Thoughtful and original design, planting schemes and management of amenity spaces can be used to create a greater sense of place and uniqueness within the city.

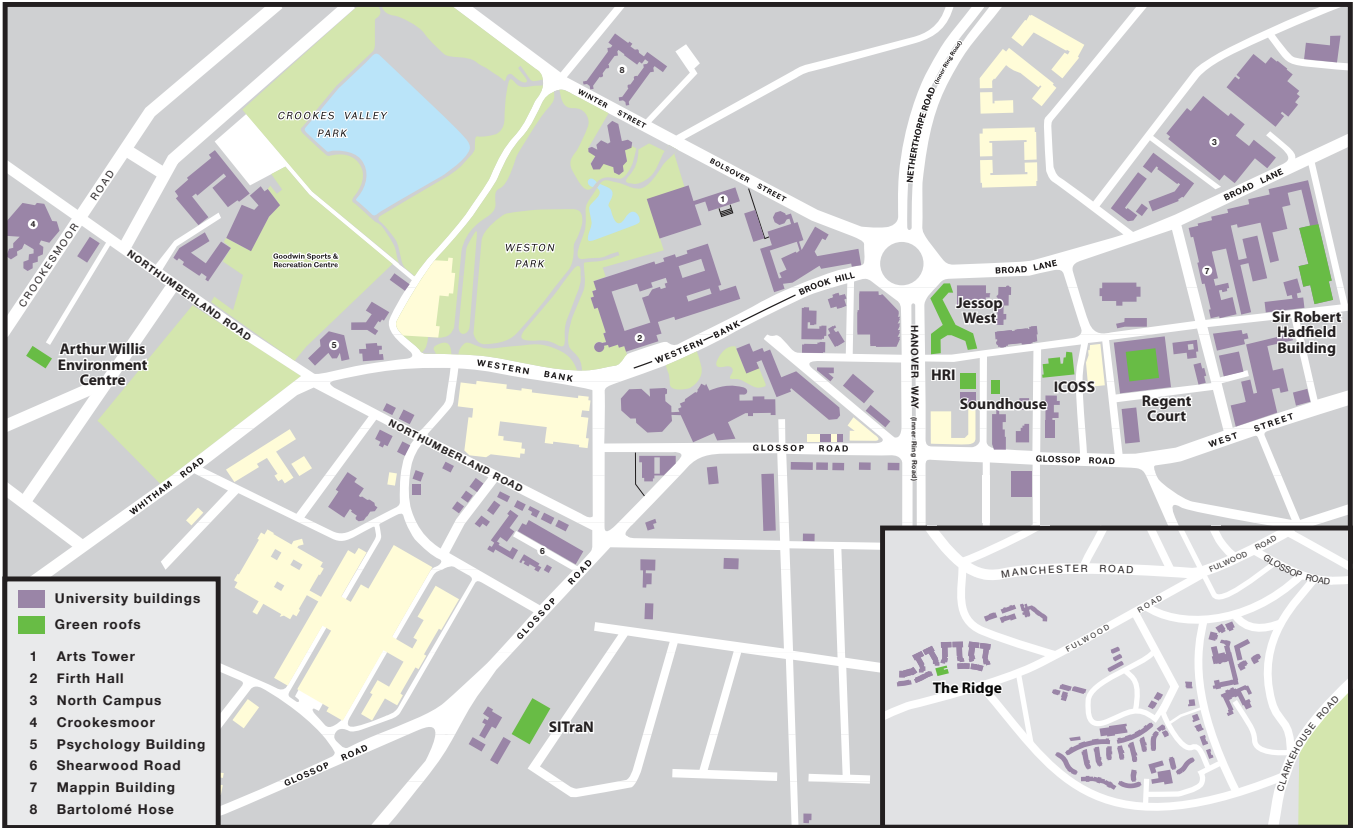
Objectives

AO1	Improve the ecological value of amenity space.
AO2	Create a sense of place and uniqueness within the city.

Targets

AT1	Replace grassed areas with low level usage with floristic grasslands.
AT2	Replace species in shrub and flower beds that have little value ecologically with species that provide food and nectar.
AT3	Implement an ecologically sympathetic grounds maintenance management regime (e.g. schedule hedge cutting to take place outside of the bird nesting period).
AT4	Replace trees, as they decline, with species that provide greater food and nectar services.

Actions		Lead Dept	Deadline
AA1	Develop a landscape and tree management plan.	Landscape Services	2015
AA2	Review grounds maintenance management schedules.	Landscape Services	2013
AA3	Develop planting schemes and species lists for amenity areas that support the University's aims.	Landscape Services / Department of Landscape	2013
AA4	Begin a systematic review of amenity areas to identify and implement appropriate improvements.	Landscape Services	2013





Lunch time on the University Concourse

Employee and student engagement

Introduction and description

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 employees and students with the University's green estate through a range of activities, from active engagement (for example through volunteering on practical conservation 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 university community and promote stewardship of the 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

Traditionally, small initiatives have been identified and undertaken to increase employee and student engagement as opportunities have arisen. Opportunities to rekindle the relationship between the University's urban student residents and employees and the natural world can be maximised by a proactive and structured approach.



The pond – Endcliffe Village

Objectives

EO1	To integrate biodiversity into life at the residences.
EO2	To increase the use and appreciation of biodiverse greenspace.
EO3	Develop certain areas of green space as an educational resource.

Targets

ET1	Engage students in practical conservation work.
ET2	Increase engagement and awareness through communication and site interpretation.

Actions		Lead Dept	Deadline
EA1	Develop educational resources for departments to use in teaching and learning activities.	Landscape Services / Department of Landscape	on going
EA2	Develop opportunities for both passive and active student engagement.	Student's Union	on going
EA3	As funds become available, develop site specific interpretation for biodiverse areas.	Landscape Services	on going
EA4	As habitat improvement works progress develop nature trails through the estate to increase wider engagement and passive education.	Landscape Services	on going
EA5	Develop a community engagement action plan.	Accommodation and Commercial Services	2013

Development

Introduction and description

Biodiversity can be integrated with development, and it is possible to develop buildings and urban spaces that are valuable to both people and 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 are 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 the building user.



European Rabbit (*Oryctolagus cuniculus*)

Opportunities

The University's on-going development across the estate means there are opportunities to integrate biodiversity into development projects. Collaboration between the architect, project manager and the biodiversity steering group at an early stage can ensure that innovative and progressive ideas are included in designs and exemplar buildings are realised.



Chaffinch (*Fringilla coelebs*)

Objectives

- DO1 To ensure that biodiversity is an integral part of the design process in all University developments.

Targets

- DT1 To increase the net area of green space on the University's estate.
- DT2 To ensure designs for new developments add value to any existing environmental aspects.
- DT3 To mitigate all environmental damage incurred during University developments.

Actions		Lead Dept	Deadline
DA1	Produce a guidance document that sets out the University's biodiversity policies and requirements for design teams.	Environment Team	2012
DA2	Produce a guidance that sets out the University's requirements for building contractors.	Environment Team	2012

Surveying and monitoring

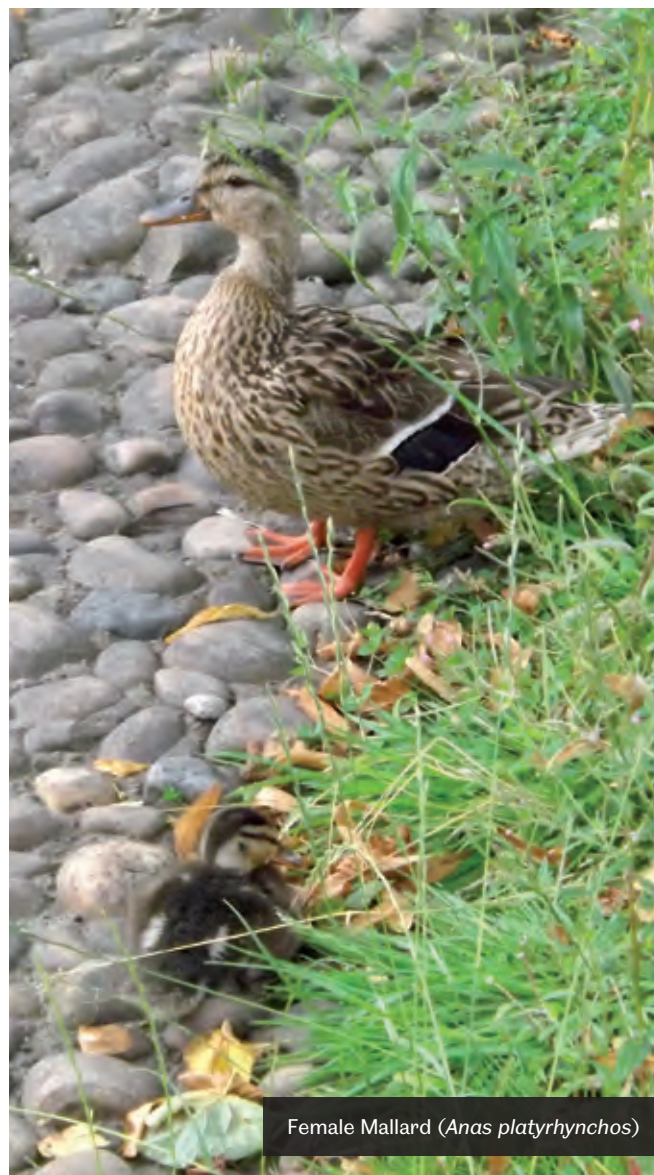
Introduction and description

Surveying and monitoring are important parts of any biodiversity action plan. 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.

Phase One habitat surveys, NVC classification of habitats and desk top surveys for the estate need to be completed first. The second phase of the surveys will be site specific species surveys, for example mammals, birds, terrestrial and aquatic invertebrates, and botanical surveys (particularly in sites of semi-natural ancient woodland or planted ancient woodland). Survey work commenced in September 2011 with the production of three baseline surveys for Old Wood (Ranmoor Village), Crewe Hall, and the university sports centre on Northumberland Road. These sites were chosen as they have some value for nature conservation.

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 the 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, and used as learning opportunities to develop employability skills.



Female Mallard (*Anas platyrhynchos*)

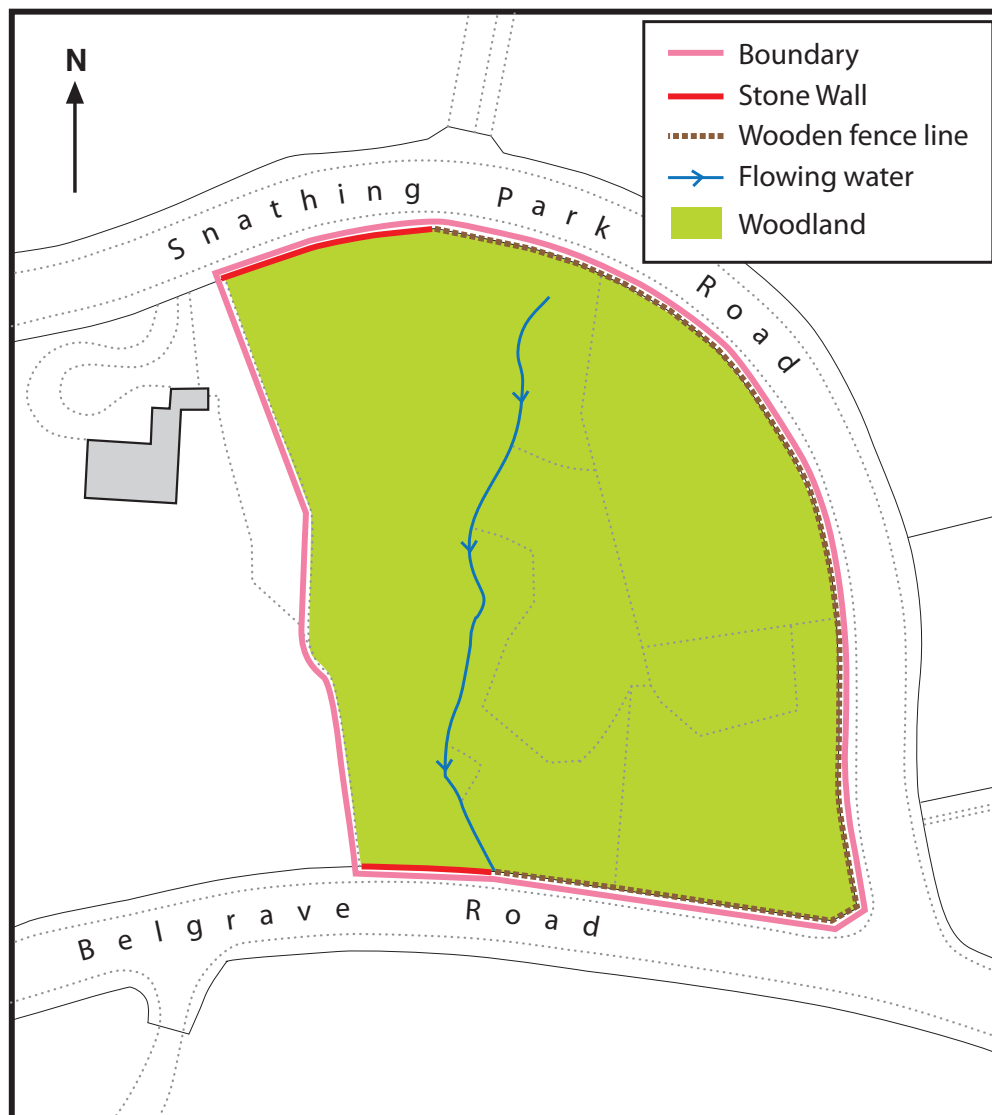
Objectives

- SO1 Develop a system of monitoring the success of this BAP and related initiatives.

Targets

- ST1 Establish a full set of baseline data for habitat types, birds, mammals, and invertebrates for areas identified within the estate.

Actions		Lead Dept	Deadline
SA1	Formalise a monitoring strategy and system for data feedback and handling.	Environment Team / Landscape Services	2013
SA2	Define and commission surveys.	Environment Team / Landscape Services	on going



Sign – Belgrave Road Conservation Area

Belgrave Road Woodland

Introduction

Belgrave Road woodland, situated in the Fulwood area of Sheffield, was donated to the University by the Cole Brothers some years ago. The site is protected from development due to an imposed covenant placed on the woodland that restricts building to the construction of one single storied non-residential property. The woodland was used by Animal and Plant Sciences to study honey bee populations and factors affecting their decline and the building that currently stands on site had been used for storage purposes. Following the cessation of these activities in the late 1980s, when the bees were moved to a new university site at Tapton Hall, the woodland was neglected and was unmanaged for over two decades. Consequently, both the understorey and canopy became over grown and many trees were dangerous.

Management of the site recommenced in the spring of 2011, and involved a programme of work to make the trees safe so other works in the woodland could start. Strong winds in the October of 2011 caused some trees to collapse and improved the structure of the woodland by opening up large holes in the canopy and understorey and improving light and space, particularly around the brook.

Site Description

The site, 1.58 acres in size, has a small culvert flowing in a south westerly direction through the woodland. In the northern section of the woodland it is steep sided, while the margins become less steeply graded in the southern end of the site. The southern area of the stream, where it flows under Belgrave Road is surrounded by an area of damp woodland, and includes goat willow and marsh marigold. The eastern side of the woodland declines gradually down from north to south, however there are some steep sections. Although the canopy is mature and high it has a good age structure. The areas of dense understorey consist of mostly non-native North American *Rubus* species (*Rubus spectabilis*) and cherry laurel (*Prunus laurocerasus*).

Where light and space allows there is a good herb layer, which is dominated by lesser celandine (*Ranunculus ficaria*), ground elder (*Aegopodium podagraria*) and cow parsley (*Anthriscus sylvestris*).

Habitats

A number of habitats have been identified in this small woodland, these include;

- Broadleaved woodland
- Stone walls
- Standing and fallen deadwood
- Running water
- Wet woodland

Factors affecting site management

There are a number of factors affecting the management of Belgrave Road woodland. These include a lack of previous management or a properly structured management plan.

Additionally the woodland is used by local residents for dog walking and is often frequented by children who build and burn fires; however safety works have reduced this problem.

Opportunities

Structural improvements (including thinning and replanting of the invasive understorey species with native and more ecologically important species and removing immature specimens and saplings of invasive trees such as sycamore) and habitat improvements can create new opportunities in a number of ways. Primarily, improving woodland structure will bring about greater species diversity, reducing instances of monoculture and the dominance of individual species. This will make the woodland more attractive and important to a wider range of species, increase the amenity value and improve the site as an educational resource.

Improving public access to the site, for example by installing gates / styles or a woodland path, may increase local use of the site, which in turn may encourage local stewardship and decrease instances of vandalism.

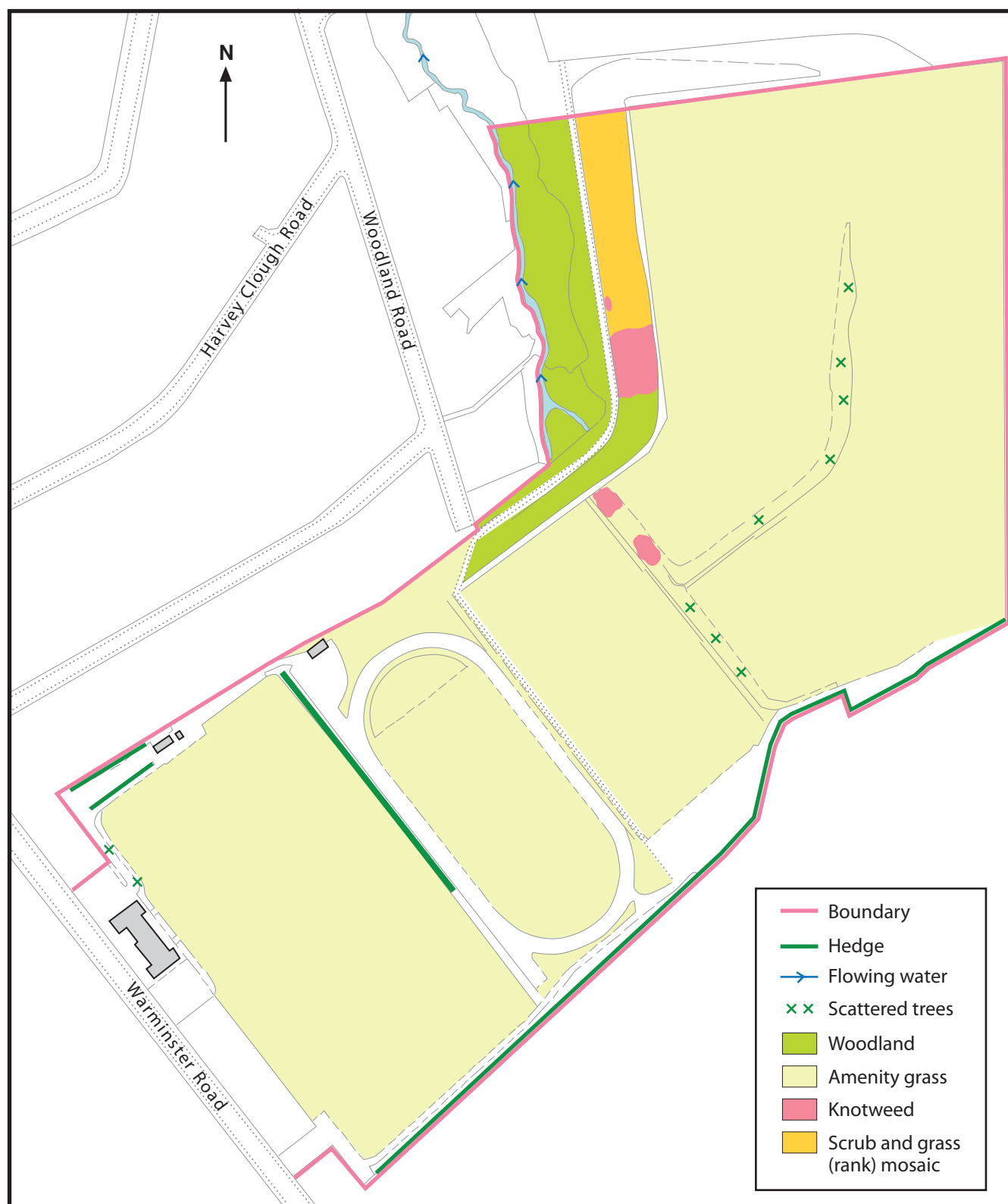
Objectives

BeO1 To increase biodiversity and improve habitat quality whilst improving amenity value and educational resources.

Targets

BeT1 To improve local appreciation, care and awareness by improving access and value.

Actions		Lead Dept	Deadline
BeA1	Conduct a desktop and extended phase one habitat survey for the site.	Landscape Services	2014
BeA2	Produce a comprehensive management plan.	Landscape Services	2015
BeA3	Re-instate boundary fence to prevent fly-tipping.	Landscape Services	2012
BeA4	Removal and control of non-native and invasive plant species (including North American <i>Rubus</i> sp. <i>Fallopia japonica</i> and <i>Heracleum mantegazzianum</i>).	Landscape Services	on going
BeA5	Improve access through the provision and improvement of access points, pathways and signage.	Landscape Services	2013
BeA6	Increase cover of ground flora by 30% through student projects and activities.	Landscape Services / Department of Landscape	on going



Norton Playing Fields

Introduction

The University's playing fields at Norton have been managed as sports pitches for many years. The site includes facilities for football, rugby and cricket, and a pavilion (which may be redeveloped within the next few years).

Although the sports pitches are maintained to a very high standard, the surrounding areas have been somewhat neglected in recent years. This has led to overgrown borders and a significant problem with Japanese Knotweed.

Improvements in the management of the wider grounds (banks sides and borders) began in the spring of 2012, and plans have been developed to bring the Japanese Knotweed under control and eradicate it completely from the site in the long term.

Site Description

The site is 45 acres of almost completely open amenity grassland. In the north-west the gradient drops in tiers and forms the playing fields. The northern boundary of the playing fields is a steep bankside that falls into a stretch of woodland that is heavily infested with knotweed. The small brook in the woodland, which flows towards the city, forms the property boundary.

The southern boundary of the site borders the Lees Hall Golf Club and a small group of allotments. The boundary itself is a relatively species rich hedgerow. The western boundary is formed by Warminster Road and the east by Newfield Secondary School.

Habitats

A number of habitats have been identified on this site, these include;

- Broadleaved woodland
- Hedgerow
- Amenity grassland
- Standing and fallen deadwood
- Running water

Factors affecting site management

Historically all grounds maintenance activities and resources have focused on maintaining high quality sports pitches and wider habitat management has not been attempted. The potential for habitat creation is limited to the northern banksides; however this location is where the knotweed problem is the worst. Consequently any plans for habitat creation can only be implemented once the Japanese Knotweed has been eradicated.

Opportunities

Habitat can be improved and created along the boundaries of the site and in the areas left by the eradication of the Japanese knotweed (vegetative reinstatement is an important factor in habitat restoration following eradication of Japanese knotweed). Habitat reinstatement in areas once infested with Japanese knotweed also present the University with opportunities for long term research programmes into the most ecologically important forms of replacement planting, for example whether non-native planting schemes are more beneficial than native schemes.

Objectives

NoO1 To increase biodiversity and improve habitat quality whilst maintaining a high standard sporting facility.

Targets

NoT1 To manage all non-sports areas for biodiversity.

NoT2 Completely eradicate Japanese Knotweed from the site.

Actions

NoA1 Conduct a desktop and extended phase one habitat survey for the site.

NoA2 Produce a management plan.

NoA3 Improve boundary margin through increased hedgerow diversity and implementing a strip of wildflowers around the hedge.

NoA4 Removal and control of non-native and invasive plant species (including North American *Rubus*, *Fallopia japonica* and *Heracleum mantegazzianum*).

NoA5 Conduct a tree assessment and safety works.

Lead Dept

Landscape Services

Landscape Services

Landscape Services

Landscape Services

Landscape Services

Deadline

2014

2016

2014

2014

2012



Endcliffe Student Village

Introduction

Endcliffe Village is a large and contemporary student village that was recently redeveloped on the site of Halifax Hall and the old Sorby and Earnshaw halls of residence. The site was originally part of a large estate that included a large Beech woodland and there are pockets of woodland containing remnants of this semi-natural habitat within the boundaries of the village.

The Endcliffe Village also includes the grounds of Crewe Hall, Carrysbrook Court and Stephenson Hall. These are older developments and the green space associated with these buildings is more mature with well-developed shrub beds and mature areas of woodland.

Site Description

The green space around the village is mainly amenity grassland with planted formal shrub beds. There are also some species poor hedgerows, and some very mature shrub beds that have a hedgerow like form. The woodland pockets consist of both semi-natural woodland and planted specimens. The understorey varies in different pockets of woodland, some is open, while in other areas it consists of dense Holly and Cherry Laurel. The open areas of parkland type habitat contain a wide and diverse range of fruiting trees, including Victorian apple trees, damson, plum and pear.

In the southern end of the site there is a large body of still water, seemingly mesotrophic, this pond was to the rear of Halifax Hall, a portion of this building now makes up the Halifax conference centre, in the south west of the village. In 2011 two areas were planted with perennial wildflower seed and plugs as part of the amenity plan, these include a small area around the bank side of the pond and an area of little used grassland on the service road to The Edge.

Some of the old buildings in the village provide roosting habitat for bats and migrant birds.

Current management of the site includes regular mowing of the amenity grass areas; hedge cutting (which is carried out annually following the end of the bird nesting season) and weed control in formal beds and on hard standing areas

(either hand pulling and herbicide control). The trees on the site are regularly inspected and safety works carried out when necessary.

Habitats

There are a number of habitats present on site including;

- Semi natural broadleaved woodland
- Parkland scattered trees
- Amenity grassland
- Planted formal shrub beds
- Bare ground
- Stone walls
- Buildings
- Standing water

Factors affecting site management

The main factor affecting the habitats at the village is the lack of coherent habitat management; little is currently known regarding the types and extent of different habitats and species on site so it has been difficult to identify appropriate improvements. The current management emphasis is on the amenity value of the site, and while there are plenty of opportunities to improve the biodiversity of value of the village, any future habitat management will need to reflect this amenity value.

Opportunities

There are opportunities to reconnect the often small and fragmented habitats in the village and create a more structured mosaic of habitats. Additionally, there are opportunities to increase the emotional connection the student residents have for the natural world. There is also an opportunity to develop a student led allotment project, through which students and staff can connect the wider social and ecological benefits of producing their own food.

Objectives

En01 To create a biodiverse student village that is a major contributor to amenity value and individual sense of well being.

Targets

EnT1 To increase biodiversity and improve habitat quality whilst improving amenity value and educational resources.

Actions		Lead Dept	Deadline
EnA1	Conduct a desktop and extended phase one habitat survey for the site.	Landscape Services	2014
EnA2	Produce a site specific management plan, which will include HAPs and SAPs if necessary.	Landscape Services	2015
EnA3	To develop site interpretation.	Landscape Services / Accommodation and Commercial Services	2015
EnA4	To increase the extent of habitat for mammals and birds.	Landscape Services / Accommodation and Commercial Services	2016



Ranmoor Student Village

Introduction

Like Endcliffe Student Village, the Ranmoor Student Village is a relatively recent redevelopment on the site of a former hall of residence it also has some family apartments on the eastern side of Shore Lane. The majority of the site is a series of lawned areas and planted shrub beds around buildings and car parking. There is a small area of woodland along the southern edge (parallel with Fulwood Road) and another larger area on the western side of the site.

Site Description

Ranmoor village is similar to the Endcliffe village - the general mosaic of habitats is very similar, although the total area of amenity grassland is less and the woodland is different in composition and structure. Old Wood (Ranmoor Village) is a high canopy even aged oak woodland with a dense understorey of holly, some yew and hazel, with a shallow, slow flowing brook running through it. Whereas the woodland pockets on the Endcliffe Village are less defined remnants of ancient Beech woodland.

The western boundary of the site is a stone wall, which separates the village from Thornbury Hospital. The northern boundary of the site is the footpath adjacent to Shore Lane and the housing/flats. The eastern boundary is a footpath leading from Fulwood Road to Shore Lane and the southern boundary is Fulwood Road.

Current management of the site includes regular mowing of the amenity grass areas; hedge cutting (which is carried out annually following the end of the bird nesting season), weed control in formal beds and on hard standing areas (either hand pulling and herbicide control). The trees on the site are regularly inspected and safety works carried out when necessary.

One of the University's largest green roofs is on The Ridge, it has a good diversity of sedum and wildflower species that provide a vital flowering nectar source for a greater period of the year than either single habitat type produces individually.

Habitats

There are a number of habitats present on site including:

- Semi natural broadleaved woodland
- Planted broadleaved woodland
- Mosaic of tall ruderal vegetation, grasses and planted scrub
- Amenity grassland
- Planted formal shrub beds
- Single mature trees
- Bare ground
- Stone walls
- Buildings

Factors affecting site management

The main factor affecting the habitats at the village is the lack of coherent habitat management; little is currently known regarding the types and extent of different habitats and species on site so it has been difficult to identify appropriate improvements. The current management emphasis is on the amenity value of the site, and while there are plenty of opportunities to improve the biodiversity of value of the village, any future habitat management will need to reflect this amenity value.

Opportunities

There are opportunities to reconnect the often small and fragmented habitats in the village and create a more structured mosaic of habitats. Additionally, there are opportunities to increase the emotional connection the student residents have for the natural world.

Objectives

- | | |
|------|---|
| RaO1 | To create a biodiverse student village that is a major contributor to amenity value and individual sense of well being. |
|------|---|

Targets

- | | |
|------|--|
| RaT1 | To increase biodiversity and improve habitat quality whilst improving amenity value and educational resources. |
|------|--|

Actions		Lead Dept	Deadline
RaA1	Conduct a desktop and extended phase one habitat survey for the site.	Landscape Services	2014
RaA2	Produce a site specific management plan, which will include HAPs and SAPs if necessary.	Landscape Services	2015
RaA3	Create a large wildflower/species rich grassland margin to the east of Old Wood.	Landscape Services / Department of Landscape	2016
RaA4	Create an area of coppice managed woodland at the southern end of Old Wood, planted with wildflower plugs and woodland grasses as an educational resource for students.	Landscape Services	2016

Appendices



Making Links

Each action plan has its own unique targets and actions, which have been developed to achieve the related objectives (and in the case of actions – targets). Delivering these will contribute either directly or indirectly to the objectives and targets that have been developed for other action plans. The tables below identify those links.

Objectives, targets and actions

Code	Target	Related objectives, targets and actions
AT1	Replace grassed areas with low level usage with floristic grasslands.	EO2
AT4	Replace trees, as they decline, with species that provide greater food and nectar services.	EO1
ET1	Engage students in practical conservation work.	EnO1, RaO1
ET2	Increase engagement and awareness through communication and site interpretation.	AO1
DT2	To ensure designs for new developments must add value to any existing environmental aspects.	AO1, AO2
BeT1	To improve local appreciation, care and awareness through improving access and value.	AO2, EO1, EO2, AA1, AA2, AA3, ET1, ET2
NoT1	To manage all non sports areas for biodiversity.	AO2, EO1, EO2, AA1, AA2, AA3, ET1, ET2
EnT1	To increase biodiversity and improve habitat quality whilst improving amenity value and educational resources.	AO2, EO1, EO2, AA1, AA2, AA3, ET1, ET2
RaT1	To increase biodiversity and improve habitat quality whilst improving amenity value and educational resources.	AO2, EO1, EO2, AA1, AA2, AA3, ET1, ET2

Code	Action	Related objectives, targets
AA1	Develop a landscape and tree management plan.	BeT1, NoT1, EnT1, RaT1
AA2	Review grounds maintenance management schedules.	BeT1, NoT1, EnT1, RaT1
AA3	Develop planting schemes and species lists for amenity areas that support the University's aims.	BeT1, NoT1, EnT1, RaT1
AA4	Begin a systematic review of amenity areas to identify and implement appropriate improvements.	BeT1, NoT1, EnT1, RaT1
DA1	Produce guidance document that sets out the University's biodiversity policies and requirements for design teams.	AO1, AO2
BeA4	Removal and control of non-native and invasive plant species (including North American <i>Rubus</i> sp. <i>Fallopia japonica</i> and <i>Heracleum mantegazzianum</i>).	AO1
NoA3	Improve boundary margin through increased hedgerow diversity and implementing a strip of wildflowers around the hedge.	AO1
NoA4	Removal and control of non-native and invasive plant species (including North American <i>Rubus</i> , <i>Fallopia japonica</i> and <i>Heracleum mantegazzianum</i>)	AO1
RaA3	Create a large wildflower/species rich grassland margin to the east of Old Wood.	AO1, EO2
RaA4	Create an area of coppice managed woodland at the southern end of Old Wood, planted with wildflower plugs and woodland grasses as an educational resource for students.	EO3

Complementary policies and strategies

The University has developed several policies and strategies that have clear links with the Biodiversity Action Plan, they are briefly outlined below.

University of Sheffield Environmental Policy

The University of Sheffield is a large organisation which has just under 25,000 students, 5,500 staff and several hundred buildings. Due to the size and nature of activities the University has some significant environmental impacts affecting the local and global environment.

The University recognises its impact and has made a corporate commitment to improving its environmental performance by developing and adopting an Environmental Policy. This has been in place since 1997 (and revised in 2008) and provides the framework for all our work, whether it be in relation to energy saving, waste and recycling, sustainable transport or biodiversity.

Estates Strategy 2010 – 2015

The University's estate comprises 340,000m² net internal space of buildings and infrastructure across an area of 40 hectares; it is a key resource that needs to be well planned, managed and continually improved. The Estates Strategy sets out the vision for the University estate through to 2015.

The primary aims of the strategy are to enhance the estate and the city landscape with investment in a mixture of appropriate new development and refurbishment of legacy buildings, however the strategy also prioritises future development plans to upgrade the University's public realm. This presents a significant opportunity to use green spaces and biodiversity to create a greater sense of place and uniqueness within the city.

Japanese Knotweed Management Reports

The University understands its obligation to control the spread of this highly invasive species and is committed to its removal/eradication across the estate. Approximately 4,555m² of the University's land is affected by Japanese Knotweed, however the full extent has not yet been fully identified. 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 5,500 trees are regularly resurveyed and their current state, size and condition have been 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.

All trees that are felled are replaced with trees of the same species or species more suitable to the ecological profile of the area.



The Edge building on the Endcliffe Village

Full list of actions

The table below brings together all the actions the University is committed to achieving and lists them in chronological order.

Ref	Actions	Lead Dept	Deadline
DA1	Produce a guidance document that sets out the University's biodiversity policies and requirements for design teams.	Environment Team	2012
DA2	Produce a guidance that sets out the University's requirements for building contractors.	Environment Team	2012
BeA3	Re-instate boundary fence to prevent fly-tipping.	Landscape Services	2012
NoA5	Conduct a tree assessment and safety works.	Landscape Services	2012
AA2	Review grounds maintenance management schedules.	Landscape Services	2013
AA3	Develop planting schemes and species lists for amenity areas that support the University's aims.	Landscape Services / Department of Landscape	2013
AA4	Begin a systematic review of amenity areas to identify and implement appropriate improvements.	Landscape Services	2013
EA5	Develop community engagement action plan.	Accommodation Services	2013
SA1	Formalise a monitoring strategy and system for data feedback and handling.	Environment Team / Landscape Services	2013
BeA5	Improve access through the provision and improvement of access points, pathways and signage.	Landscape Services	2013
NoA3	Improve boundary margin through increased hedgerow diversity and implementing a strip of wildflowers around the hedge.	Landscape Services	2014
BeA1	Conduct a desktop and extended phase one habitat survey for the site.	Landscape Services	2014
NoA1	Conduct a desktop and extended phase one habitat survey for the site.	Landscape Services	2014
NoA4	Removal and control of non-native and invasive plant species (including North American <i>Rubus</i> , <i>Fallopia japonica</i> and <i>Heracleum mantegazzianum</i>).	Landscape Services	2014
EnA1	Conduct a desktop and extended phase one habitat survey for the site.	Landscape Services	2014
RaA1	Conduct a desktop and extended phase one habitat survey for the site.	Landscape Services	2014

Full list of actions (cont.)

Ref	Actions	Lead Dept	Deadline
BeA2	Produce a comprehensive management plan.	Landscape Services	2015
AA1	Develop a landscape and tree management plan.	Landscape Services	2015
EnA2	Produce a site specific management plan, which will include HAPs and SAPs if necessary.	Landscape Services	2015
EnA3	To develop site interpretation.	Landscape Services / Accommodation Services	2015
RaA2	Produce a site specific management plan, which will include HAPs and SAPs if necessary.	Landscape Services	2015
RaA3	Create a large wildflower/species rich grassland margin to the east of Old Wood.	Landscape Services / Department of Landscape	2016
RaA4	Create an area of coppice managed woodland at the southern end of Old Wood, planted with wildflower plugs and woodland grasses as an educational resource for students.	Landscape Services	2016
NoA2	Produce a management plan.	Landscape Services	2016
EnA4	To increase the extent of habitat for mammals and birds.	Landscape Services / Accommodation Services	2016
EA1	Develop educational resources for departments to use in teaching and learning activities.	Landscape Services / Department of Landscape	on going
EA3	As funds become available, develop site specific interpretation for biodiverse areas.	Landscape Services	on going
EA2	Develop opportunities for both passive and active student engagement.	Student's Union	on going
EA4	As habitat improvement works progress develop nature trails through the estate to increase wider engagement and passive education.	Landscape Services	on going
BeA4	Removal and control of non-native and invasive plant species (including North American <i>Rubus sp. Fallopia japonica</i> and <i>Heracleum mantegazzianum</i>).	Landscape Services	on going
BeA6	Increase cover of ground flora by 30% through student projects and activities.	Landscape Services / Department of Landscape	on going
SA2	Define and commission surveys.	Environment Team / Landscape Services	on going

**The Biodiversity Action Plan was written by Calum Ryan and Charlotte Winnert
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