Ecosystem Services

Biodiversity Action Plan

2020 - 2025

Estates & Facilities

UNIVERSITY of GREENWICH

Foreword

Protecting ecosystem services and interlinking biodiversity is key to the survival of life on Earth. However, human interferences are placing the survival of species around the world at risk, and with it tipping our own and future generations growth into an imbalance.

At Greenwich we are fortunate to have three campus balanced in urban and natural landscapes. Our natural landscapes provide opportunities for students, staff and visitors to enjoy benefits arising from biodiversity and ecosystem services.

As a landowner and a teaching institution, we have a responsibility of to conserve protected species and to 'lead by example', showing students how correct management can bring human and biological improvement. Our Biodiversity Action Plan recognises not only the benefits of biodiversity, but of wider ecosystem services and the financial gain including natural capital into decision making. This plan will help achieve our environmental objectives and obligations, whilst providing opportunity to conserve and enhance Greenwich's natural landscape for all to enjoy.

We have a wealth of globally recognised expertise on our doorstep, in addition to community support and partnerships that we should recognise and profit from.

We have made significant process, but more remains to be done. I am delighted to endorse this action plan; through training, awareness, and extensive collaboration we will create a thriving environment for us and our natural world.

Professor Jane Harrington
Vice Chancellor

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A Word of Thanks

Protecting our natural space and improving ecosystem service benefit is down to individual and collective efforts.

A thank you goes to everyone who goes the extra (sustainably travelled) mile to make a positive improvement.

Particularly we would like to thank:

- Ecosystems Services Steering Group
- Sustainability Management Board
- Estates Management
- Facilities Management
- Sodexo Facilities Management
- Eco-team (student & staff network)
- Maddy Hutt (Proofreader)
- David Jackson (author)

Executive Summary

Ecosystem services, natural capital and biodiversity are all interlinked definitions to quantify and illustrate how the past, current and future prosperity of the human species is dependent on the natural world. However, human interferences are placing the survival of species around the world at risk, and with it tipping our own growth into an imbalance.

According to the UK State of Nature Report (2019), more species have seen declines in abundance (41%) since 1970 than those with positive increases (26%). Where interference occurs, biodiversity management is vital in ensuring the continual survival for all life forms. A **Biodiversity Action Plan (BAP)** is an internationally recognised tool with the aim to protect and restore, following on from man-made changes.

At Greenwich we take our responsibilities seriously. We aim to 'lead by example', showing students being educated in related best practice how that practice can be successfully implemented for human and biological improvement.

This BAP outlines how we intend on enhancing ecosystem services across our estate, building upon policy and past plans. Split into four areas the objectives of this BAP are not in traditional format, they expand biodiversity into wider ecosystem services with assessing organisational impact and opportunity.

We are proud of our current ecosystem highlights (see across) and these have contributed into forming four key areas and the associated objectives of our biodiversity action plan (see table below).

Habitat & Species	
HO1	To maintain & enhance the biological diversity of campus natural land
HO2	To balance the conservation opportunity with amenity needs
Setting up the Greenwich Monitoring Scheme	
MO1	To develop a system of monitoring the success
Student, Employee & External Engagement	
EO1	To integrate biodiversity into University life (students & staff)
EO2	To maintain areas of natural land for educational purposes
EO3	To provide suitable training to associated grounds & estates staff
Accounting for Biodiversity in Developments	
NO1	To integrate biodiversity net gain across our capital projects (including designs to & not already to BREEAM standard)

1. Introduction

Key Terms

Ecosystem services are the benefits provided by ecosystems that contribute to human survival and enhance our well-being. They can be direct, or indirect and can be split into four broad categories (Figure 1).

They could help reduce summer solar and heat gain through tree planting, reduce run off and flooding, provide spaces to improve wellbeing and reduce particulate pollution.

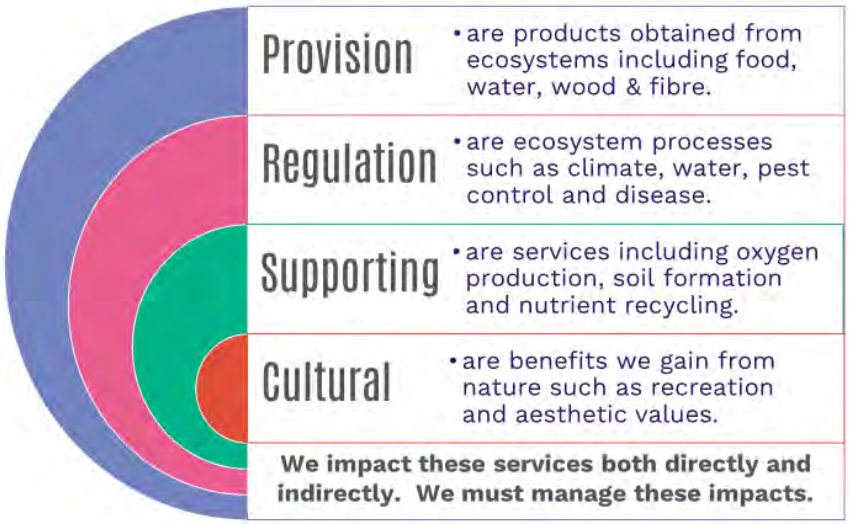


Figure 1: *Diagram illustrating the ecosystem services.*

Financial benefits can be calculated. **Natural Capital** research on woodlands, in 2015, on behalf of DEFRA concluded that per year; recreational value accounted for £1.7billion, CO_2 sequestration for both deciduous and coniferous trees totalled £813million, biomass for timber totalled £174million.

Biodiversity itself can supply a range of ecosystem services. Biodiversity is defined to the variety of life that can be found on Earth (plants, animals, fungi and micro-organisms) in addition to the diverse communities that they form and the habitats in which they live. The greater diversity of species the higher ecosystem productivity and no matter how small, all organisms have a part to play.

Where anthropogenic change occurs, biodiversity management is vital in ensuring the continual survival for all life forms. A **Biodiversity Action Plan (BAP)** is an internationally recognised tool for addressing threatened species and habitats with the aim to protect and restore, following on from man-made changes.

Figure 4: *SDGs most related to BAPs.*

Globally, ecosystem services and sustainability are increasingly taken seriously. The **UN Sustainable Development Goals (SDGs)** are 17 aspirations adopted in 2015 with 2030 deadlines for building on the UN's principle of "*leaving no one behind*", the agenda that emphasizes a holistic approach to achieving sustainable development for all.

Biodiversity is essential for sustainable development, directly contributing to human well-being and future prosperity.

All goals are interlinked; however, certain actions can positively affect in direct, or indirect ways. Biodiversity Action Plans are no different, with five SDGs attributable to the direct management of natural space (Figure 2).

The Legislative Context

Though legal compliance is not the primary driver for the development of this Biodiversity Action Plan it is, nevertheless, an important consideration. Our Environmental Management System, accredited to ISO14001:2015 standard likewise puts focus to our operations, associated impacts and how they can be reduced or resolved.

The University's legal obligation is set out in the Natural Environment and Rural Communities Act (NERC), adopted in October 2006. Section 40 requires all public bodies *"in exercising its functions, to have the regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity".*

Focusing in on the BAP

Published in 1994, the **UK BAP** was in response to the **Convention on Biological Diversity (CBD)** signing in 1992 aiming for the development and enforcement of national strategies to conserve, protect and enhance biological diversity.

The **UK Post-2010 Biodiversity Framework** succeeded the UK BAP in 2012. It noted 65 priority habitats from a terrestrial, freshwater, and marine characteristic.

Habitats are not identical, encouraging regional authorities to consider their own. The **London BAP**, last reviewed in 2007, identified 214 priority species under threat within the metropolitan areas.

The Impact of Brexit

The UK's legislation was led by EU direction; **The Habitats Directive,** adopted in 1992 by all member states, ensures the conservation of 200 rare habitat types in addition to over 1,000 plant and animal species categorized into a number of protected Annexes.

It formed the cornerstone of EU wide conservation policy with the Birds Directive and established the EU wide Natura 2000 ecological network of protected areas to be safeguarded against developments.

At the time of this writing, the UK is in process of leaving the EU under Brexit. **The Environment Bill** sets out the agenda for post Brexit, with the 2019 Conservative Government stating a 'non-regression', that UK environmental legislation will not be less prominent than under EU direction.

Developing an action plan at University of Greenwich

As a responsible teaching institution, we are committed in not only educating students' in their chosen field, but also that of global issues incorporating climate change amongst other major challenges.

Fully supported by the Vice-Chancellor's group and the Sustainability Management Board (SMB), the Sustainability Policy has allowed significant progress to be made in recent years and to become embedded within our six corporate objectives.

Recognizing not only the benefits of biodiversity, but of the wider ecosystem services, in January 2020 our Biodiversity Policy was succeeded by the Ecosystem Services Policy. Supplementary to the Sustainability Policy, this document outlines our commitments not only to legal compliance, but how we intend on pushing further; through training, awareness and extensive collaboration to create a thriving environment for us and our natural world.

This BAP incorporates ecosystem services and builds upon policy alongside that our 2010 action plan. We have three separate campuses but will have an interlinked plan.

2. University Locations & Biodiversity

Together, our three campuses provide teaching facilities for over 20,000 students with over 1,500 staff. None of the campuses have been extensively surveyed for flora or fauna, with the limited surveys conducted and being done so several years ago.

Greenwich Campus

The Greenwich Campus sits on a World Heritage Site in the heart of Greenwich itself, south-east London.

The main site (Figure 3) is within Grid references TQ384 775 & TQ386 780 with two additional halls of residence further afield.

The campus falls within the Royal Borough of Greenwich who produced their own local BAP in 2010, focussing on six priority habitats and species.

A new review has not yet been conducted.

Figure 5: *Aerial view of the Greenwich Campus with areas depicting rough building and responsible area locations.*

Royal Borough of Greenwich's BAP summary:

Priority Habitats

- Acid Grassland and Heathland
- Gardens
- Parks and Green Spaces
- Wasteland
- Water's Edge, Rivers, Ponds and Wetland
- Woodland

Priority Species:

- Bats
- Black Poplar
- Black Redstart
- Hedgehog
- Stag Beetle
- Water Vole

There are seven Sites of Importance for Nature Conservation (SINCs) within a 1km radius; non-statutory but have protection in the planning system:

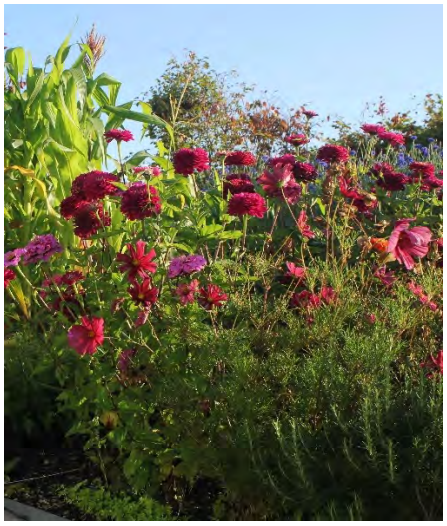
- River Thames – Freshwater, estuarine and marine habitats important for fowl and wading birds.
- Blackheath & Greenwich Park – 74 hectares with Acid grassland, meadows and ancient trees. 90 species of bird, 100 invertebrate and several mammals recorded.
- Mudchute Farm & Park – Pasture, scrub, scrub, woodland, and wetland habitat.
- Westcombe Park Railside – Green corridor of woodland with patches of grassland and tall herbs.
- Westcombe Woodlands – Predominately sycamore woodland and managed as a nature reserve.
- Millwall Park – Amenity grassland with native and exotic tree species
- St Luke's CofE Primary School Wild Area – grassland scrub with trees and a pond.

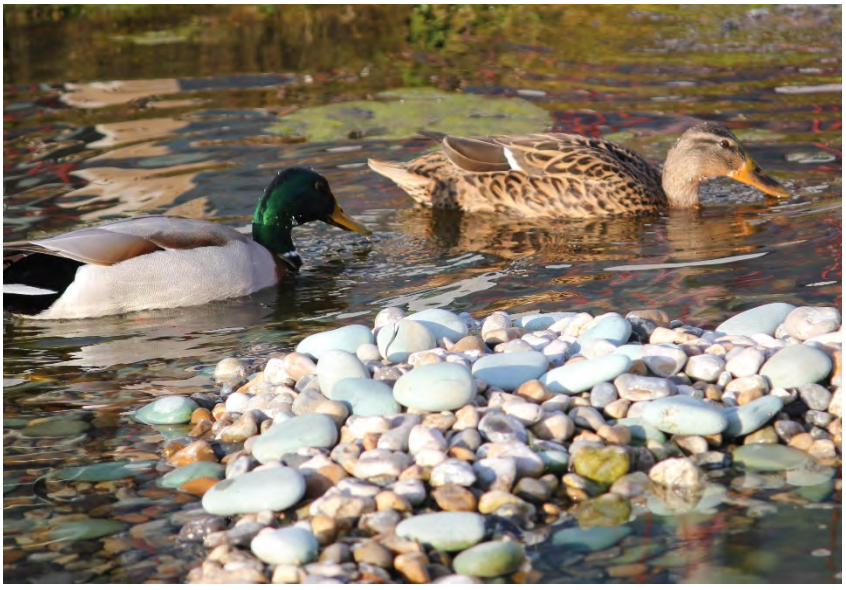
Greenwich Campus Biodiversity Summary:

Habitats (combined with GIS 2017 mapped areas)
The courtyards are managed by the Greenwich Foundation not the University. For the covered areas:

- Amenity grassland – 0.60 acres / 2439m^2
- Wildflower meadow – 0.06 acres / 239m^2
- Planted beds – 0.07 acres / 286m^2
- Roof gardens – 0.67 acres / 2713m^2 – at Stockwell Street Library, constructed to BREEAM standards. A mixture of substrate, native herbs, wildflowers & sedum, and areas for burrowing invertebrates.

- **Total 'green habitat' area of 1.4 acres / 5677m^2**
- Tree survey 2019 – 4 surveyed





Recorded Species (up to 1km distance):

- **37 fauna total species identified**
- **14 listed as near threatened, vulnerable or red**
- 2 Amphibian species
- 15 Bird species – including Redwing, Scaup, Song thrush & **Black Redstart**
- 9 Invertebrate species including the **Stag Beetle**
- 8 Invertebrate (moth)
- 9 Mammal (bat) – including **Nathusius pipistrelle & Serotine**
- 2 Mammal (other)

Figure 6: *Photographs taken at Stockwell Street Library:*
Beehives (top)
Planted flora (middle)
Recorded mallards (bottom)

Figure 7: *Aerial view of Avery Hill, Southwood Campus Rough area shaded. Grid reference TQ446 741.*

Avery Hill Campus (Southwood & Bathway)

Surrounded by green space, the Southwood Campus is in Eltham, south-east London and still within the Royal Borough of Greenwich region (Figure 4).

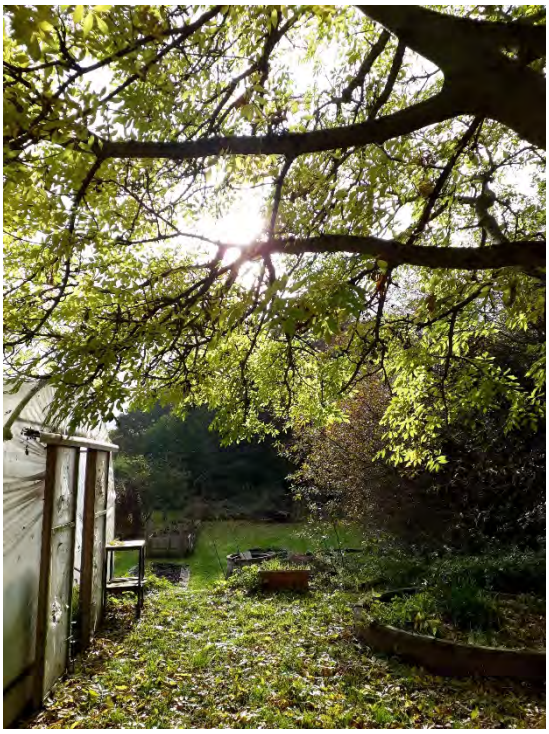
Renowned for its excellent sports teaching and facilities, Southwood is home to all-weather and grass pitches, but also incorporates our largest areas of natural landscape.

The campus is bordered by Avery Hill Park, a Green Flag Awarded space in addition to housing the 'Winter Garden'. Formerly owned by the University this hothouse comprises tropical, semi-tropical and temperate flora from around the world.

The park stretches over 90 hectares with undulating areas of amenity and conservation grassland. Young woodland and scrub sections have been planted with the headwaters of the River Shuttle flowing south, then east through the park then on and through the Southwood estate. A Site of Special Scientific Interest (SSSI) lies 3.5km to the north; Oxleas Woodland, a 130-hectare nature reserve of ancient woodland and meadow. Sightings include spotted and green woodpecker, wood warbler, firecrest, woodcock, several bat species and hedgehogs.

Five SINCs lie within a 1km local area:

- Pippenhall Meadows – Mosaic of small meadows and pastures divided by hedges and centered on important spring line grassland habitat.
- Eltham Warren Golf Course, Gravel Pit & Nature Centre – Old hedges and acid grassland with an educational ancient green area.
- Avery Hill Fields – Playing fields with numerous ancient hedgerows. Flora includes bluebells and purple hairstreaks. Breeding blackcaps and whitethroat birds are known.
- Blackfen Woods – Three small woodlands associated with the River Shuttle and noted for local bird population importance.
- Park North – Grassland park with a small lake surrounded on three sides by Shepherd Leas Ancient Woodland
- Mottingham to New Eltham Railside – Green corridors of woodland, scrub and rough grasslands.



Southwood Campus Biodiversity Summary:

Habitats (combined with GIS 2017 mapped areas)

- Amenity grassland – 7.01 acres / 28487m^2
- Wildflower Meadow – 2.85 acres / 11546m^2
- Planted beds (including vegetable garden) – 0.86 acres / 3471m^2
- Hedgerow – 0.91 acres / 3671m^2
- Wooded – 1.38 acres / 5582m^2
- Water bodies – 0.16 acres / 632m^2
- Pitches (grass and artificial) – 15.29 acres / 61876m^2

- **Total 'green habitat' area of 13.17 acres / 55441m^2** (not including pitches)
- Tree survey 2020 – 50 surveyed predominately Oak, Popular, Elm & Ash

Recorded Species (up to 1km distance)

- **37 fauna total species identified**
- **7 species listed as near threatened, vulnerable or red**
- 2 Amphibian species
- 22 Bird species – including Song Thrush, Starling & Redwing
- 3 Invertebrate species (butterfly)
- 4 Invertebrate species (other) – **Stag Beetle**
- 8 Mammal species (bat) – including **Nathusius pipistrelle & Serotine**
- 5 Mammal species (other) – including the **Hedgehog**

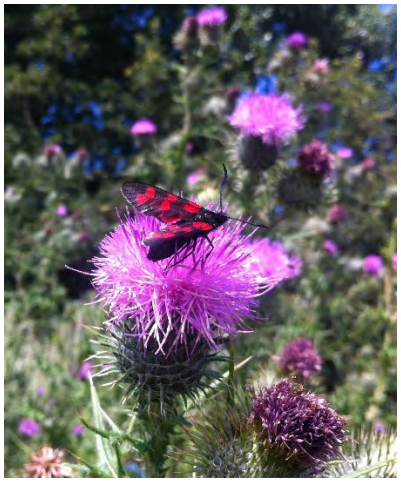


Figure 8: Photographs taken at Avery Hill consisting of:
Overlooking edible garden (top)
Wildflowers & Cinnabar moth (middle)
Edible garden pond (bottom)

Figure 9: Aerial view of Bathway Theatre. Rough area shaded. Grid Reference TQ434 788

Bathway (Figure 3) houses the University's Theatre and is sited less than 5 miles from Avery Hill. There are seven SINCs within 1km including the mudflats of the River Thames, grassland, small woodland, and possible a fragment of ancient woodland at The Oaks, Plumstead.

The Bathway site itself is poorly surveyed and currently holds no natural habitat. Up to 2015 searches, place the closest record over 150m away and recorded in 2002 (Starling and House Sparrow).

Medway Campus

Medway is in Chatham, Kent in a predominately urban environment near to the mouth of the River Medway. It is within the remit of Medway Council.

Rich in naval history, the campus is now a shared site with other universities: Kent, and Canterbury Christ Church.

Greenwich is responsible for the campus maintenance.

Succeeding the 1997 Kent BAP, the **Kent Nature Partnership Biodiversity Strategy 2020-2045** was formulated with 17 members across multi-disciplinary backgrounds.

Figure 10: Aerial view of Medway with Greenwich responsible for maintenance and management of its land. Grid reference TQ767 695

Stating a time of ecological crisis, the strategy aims to steer the collection action of invested stakeholders to work in partnership so that the county's natural landscape can be restored and threatened species to be saved. It focuses on 13 habitats and 10 species.

Medway has seen more surveys than the other campuses, particularly in bat and invertebrate activity. However, there has not been any substantial recent surveying, with the majority of records pre-dating 2016.

The county is also better recorded than the Boroughs of London and more biologically diverse:

- >20,000 recorded species, 30% of all UK species
- >3,400 rare & threatened species
- 36 BAP priority habitats
- 387 priority species
- 98 SSIs covering 8.7% of county land
- 27% of land is semi-natural habitat
- 466 Local Wildlife Sites
- 154 Roadside Natura Reserves

Figure 11: Photographs of Medway invertebrates: Red mason bee (top left), Honeybee (bottom left), Greater beefly (top right), Orange tip (bottom right).

Kent Nature Strategy summary:

Priority Habitats

- Beech & Yew Woodland
- Mixed Broadleaved Woodland
- Chalk grassland
- Lowland Meadow
- Dry acid grassland & heathland
- Hedgerows
- Brownfield
- Traditional orchard

Priority Species

- Shrill Carder Bee
- Turtle Dove
- Nightingale
- Swift
- Adder
- Adonis Blue Butterfly
- Heath Fritillary Butterfly
- Lady Orchard Butterfly
- Common Blue Butterfly
- Dwarf Moth
- Hedgehog
- Serotine Bat

Medway Campus Biodiversity Summary:

Habitats (combined with GIS 2017 mapped areas)

- Amenity grassland – 1.40 acres / 5666m^2
- Planted beds – 0.11 acres / 447m^2
- Wooded – 1.54 acres / 6234m^2

- **Total 'green habitat' area of 3.05 acres / 12347m^2**
- Tree survey 2019 – 20 surveyed mostly Horse Chestnut, Lime & Sycamore

Recorded Species (up to 1km distance)

- **222 fauna total species identified**
- **24 species listed as near threatened, vulnerable or red**
- 5 Amphibian species
- 55 Bird species – including Mistle thrush, lapwing, & Curlew
- 144 Invertebrate species – including the **Stag Beetle**
- 10 Mammal species (bat) – including **Nathusius pipistrelle & Serotine**
- 2 Mammal species (other) – including the **Hedgehog**

3. The Action Plan

Habitats & Species

The majority (51%) of natural land across the university is described as amenity space. These areas have been established to improve aesthetics or to provide areas for relaxation, recreation (not including the sport pitches), learning and social well-being. Continual improvement of these areas is the crucial element underwriting the Ecosystem Services Policy and steps towards a lifecycle approach as required for the EMS.

These spaces are also segmented, intertwined with hard landscaping. Grasses are the predominant species with pre-designed planted beds integrated to maximise amenity value. Wooded areas are found at Medway and Avery Hill, taking a more conservation approach to ensure ecological corridors exist between the neighbouring landscapes. Avery Hill itself holds 75% of the University's green habitat; it incorporates water bodies, a large wildflower meadow and a community garden to provide teaching areas and outreach.

The management of these amenity areas consist of frequent mowing regimes with historical hand weeding treatments. The University has a long-standing position to minimise use of herbicides. Herbicides are only used if there is no alternative, following review and potential damage to hard surfaces (sports pitches require a differing approach due to their specialist structure). Hedgerows are cut outside of the bird nesting season and ensure that foliage is available. Plants and trees are replaced when required and water body quality is maintained. General best practice tasks include litter prevention, habitat inspections, tree surveys, leaf clearances, invasive species control, boundary management and mulching with appropriate risk management measures.

Beehives are at all campuses, managed by external licenced beekeepers. Though they provide excellent engagement opportunities, the hive numbers are sensitively controlled to ensure there are no depletions within the native bee populations.

Stockwell Street Library, in Greenwich, has 14 green roofs, each with a unique substrate structure and planting regime to provide a multi-season nectar source for pollinators and otherwise wildlife habitat. The underpinning design was to encourage the Royal Borough of Greenwich BAP priority species Black Redstart to nest.

Opportunities

The Natural Capital Accounts for Green Space in London (NCAGS) prepared for the Greater London Authority estimate that per person for each £1 spent by local authorities and their partners on public parks, the users enjoy a least £27 in return value. This return is exceptional; it makes financial sense alone to manage amenity land correctly.

In May 2020, the University started a 5-year Integrated Facilities Management (IFM) contract with Sodexo. This includes a grounds maintenance services contract. Innovative design, planting scheme and management can create a greater sense of place and uniqueness, whilst delivering a net gain to biodiversity. There are opportunities to improve the natural land on each campus, linking ecological niches and corridors to their neighbouring habitats. Collaboration with Sodexo is crucial to this success.

Objectives	
HO1	To maintain & enhance the biological diversity of campus natural land
HO2	To balance the conservation opportunity with amenity needs
Targets	
HT1	Improve biodiversity quality within the natural land
HT2	Undertake an assessment of amenity space with those using the space

Actions		Campus	Lead	Deadline
HA1	Ensure management plans improve planting & habitat	All	Grounds/Sodexo	Annually
HA2	Maintain herbicide-free weed management where possible	All	Grounds/Sodexo/FM/ Sustainability	Annually
HA3	Develop key performance indicators and criteria to assess biodiversity value of the estates	All – differing indicators	Sustainability	2021
HA4	Assess & improve artificial shelter creation	All	Sustainability/ Grounds /Sodexo	Annually
HA5	Develop & deliver a 3-year cycle on auditing biodiversity value	All	Estates Development	2021
HA6	Assess viability of a new wildlife garden at Pembroke green	Medway	Facilities/ Sustainability	2020
HA7	Assess roof garden management success against original plan	Greenwich	Facilities/ Sustainability	2020
HA8	Assess opportunity for Bathway habitat creation	Bathway	Facilities/ Sustainability	2022
HA9	Achieve Gold against Hedgehog Friendly Campus initiative	All	Facilities/ Sustainability	2024
HA10	Build steering group membership	All	Steering Group	Annually

Creating a Monitoring Scheme

Surveying and monitoring are important parts of any biodiversity action plan and yet many fail in their objectives due to a lack of engagement and collaboration.

Initial surveys are necessary to identify and document the existing biological baseline, providing crucial data to which targets and actions can be set against. Habitat, condition, and specialist species surveys are common and typically through the services of a paid qualified professional. This expertise is invaluable for legal planning requirements alongside initial BAP set-up. However, for long-term monitoring against organisational voluntary objectives it can bring a financial burden resulting in in-frequent data.

Hundreds of charitable flora & fauna voluntary groups exist nationally, specialising from the broad to niche species and made up from enthusiasts with varying degrees of expertise. National citizen science surveys are now common, encouraging the ley person to become involved. Without data a local, regional, or national plan cannot not be successful.

Opportunities

Combining professional services with volunteers will maximise data availability. Higher data collections will bring proactive reviews to enhance the possibility for target success. Being transparent and passing on data to local record centres will also increase regional population trends.

Students and staff involvement will close the relationship between natural space use and appreciating the underlying ecosystem processes. Students in related fields of study can likewise use the campuses as an opportunity to learn and develop employability skills.

Objectives	
MO1	To develop a system of monitoring the success
Targets	
MT1	Develop & maintain a campus wide monitoring scheme using iRecord
HT2	Agree a programme of data collection and surveys to monitor trends

Actions		Campus	Lead	Deadline
MA1	Initiate iRecord monitoring scheme & encourage use	All	Sustainability	2020
MA2	Stipulation for any onsite research generating biological data to pass data onto iRecord	All	Sustainability/ Facilities	2020
MA3	Define periods for paid survey services	All	Facilities	2021
MA4	Develop a plan on maintaining & monitoring artificial shelters	All	Facilities/ Grounds/ Sustainability	Annually
MA5	Report on progress and successes to wider University	All	Sustainability	Annually
MA6	Develop plans for local groups/ students/staff to help monitor	All	Sustainability	Annually

Students, Staff & Community

All BAPs have a similar core objective to capitalise on the wider benefits of biodiversity and ecosystem services. This includes biologically diverse areas that will also provide cultural services (psychological, health, recreation) to those that encounter said spaces.

According to NCAGS, London's parks are estimated to avoid £370million of costs incurred each year because of mental ill-health. This reduces the mental health burden by 2%.

Engaging students and employees around each campus through a range of physical activities (e.g. conservation volunteering, wildlife monitoring) in addition to passive (spaces to socialise, relax and to play sport) will encourage a more personal connection with nature and benefit from improved well-being. Engagement will also foster a higher sense of ownership, caring for their surrounding environments and bring together a stronger community spirit. Bird, (2004) studied Cambridgeshire and Northumberland: residents would be willing to pay £45 and £38 respectively to protect against biodiversity loss.

The relationship between a university and a wider urban community can be complex, with issues arising over road congestion, parking, noise and occasionally pockets of anti-social behaviour causing tensions between those involved. Green space improvement is a 'common ground' for many and provides an opportunity to rekindle community bonds and appreciation for an overall green space improvement.

Opportunities

The University estates' offers opportunities both for formal educational learning, motivating individuals into pursuing professions or simply inspiring new hobbies and behavioural change. Small initiatives have been identified in the past to increase participation (free produce, potted plants) but a review is urgently required.

A key objective for this revision is to explore a more proactive approach between engagement and management, including revised training of grounds staff to have a higher awareness of the species on site. This will be developed through collaboration and guided by the Ecosystem Services Steering Group.

Objectives	
EO1	To integrate biodiversity into University life (students & staff)
EO2	To maintain areas of natural land for educational purposes
EO3	To provide suitable training to grounds & estates staff
Targets	
ET1	Engage students, staff and external community
ET2	To facilitate training for all grounds & estates staff on basic known campus wildlife

Actions		Campus	Lead	Deadline
ET1	Explore & increase the Community Garden volunteer numbers	Avery Hill	Sustainability/ Accommodation/ SU	Annually
ET2	Collaborate with external partners to help promote & volunteer	All	Sustainability/ Marketing & Communications/ SU	Annually
ET3	Embed ecosystem service benefit into residence/open day/as identified information	All	Accommodation/ Events/ SU	2021
ET4	Explore additional opportunities to increase engagement (e.g. wildlife trails/activities)	All	Sustainability/ Grounds /Sodexo/External (Medway Partner Universities)	Annually
ET5	Create a volunteer log of hours	All	Sustainability	Annually
ET6	Embed basic wildlife ID (as required i.e. Endangered species) into grounds & Estates training	All	Facilities/ Grounds/Sodexo/ Sustainability	2021
ET7	Embed wildlife safe best practice into grounds training (e.g. strimming & hedgehog risk)	All	Facilities/ Grounds/Sodexo/ Sustainability	2021
ET8	Explore needs and possibilities of green space as teaching locations	All	Faculties	2025
ET9	Incorporate beehives, hedgehog friendly campus & other features into awareness & engagement	All	Facilities/ Sustainability & External (beekeepers)	Annually

Biodiversity in Developments

The sustainable development concept, first coined the Brundtland definition in 1987 is *"development that meets the needs of the present without comprising the ability of future generations to mee their own needs".* The planetary boundary "Stockholm concept" shows we are faltering on 5/9 boundaries for safe human development. These highlight how a lifecycle approach must be adopted to negate irreversible change.

It is not impossible; ecosystem services can be integrated with development and it is possible for a project to provide the end user needs whilst achieving biodiversity net gain. NCAGS estimate that the Greater London value of carbon soil storage is around £10 million per year with £8 million value from trees. The carbon stock of soil is 2.3 million tonnes with 3.1 million in trees. Investing in net gain will achieve long-lasting impact.

Biodiversity net gain, leaving biodiversity in a better state than before development, is a principle that is to be made mandatory under the UK Government's Environmental Bill following Brexit. The principle relies on the mitigation hierarchy, to first avoid, mitigate or compensate for predicted biodiversity loss.

Opportunities

We have a responsibility to 'lead by example', whereby students being educated in related best practice and how net gain can be achieved, must be shown that we have taken those principles into our own practice and attained success.

Universities are constantly evolving environments, with developments occurring to meet the needs of current and future students. This brings opportunity to integrate innovation and progressive ideas into project design and that exemplar buildings that future end users and biodiversity net gain are a reality.

Objectives	
NO1	To integrate biodiversity net gain across our capital projects (including designs to & not already to BREEAM standard)

Targets	
NT1	Creating more habitats than are lost through our developments
NT2	To ensure new developments (regardless of scale & longevity) add value to any existing ecosystem services
NT3	To adequately mitigate, where loss in inevitable all environmental damage caused by capital development

Actions		Campus	Lead	Deadline
NT1	Develop and implement an ecosystem service standard to all building development	All	Estates Development	2021
NT2	Link new developments into monitoring & reporting to assess long-term impact & gains	All	Estates Development	2022
NT3	Provide training to Estates on basic ecosystem service provision to stimulate innovation	All	Estates Development/ Sustainability	2021
NT4	Develop a supplement to standard providing examples & how net gain achieved	All	Estates Development	2022
NT5	Conduct research into carbon sequestration rates of campus flora habitats	All	Faculties/ Sustainability	2025

4. Review

The implementation of this plan will allow measurements of ecosystem services to be evaluated against potential environmental, social and financial benefits. This plan will be a living document, rather than a one-off event. Its overall success will achieve local, national and SDG targets and highlight how human development can be in harmony with the natural environment.

A summary of progression will be produced annually, within the Sustainability Report; providing a condensed view of this overarching plan so readers can gain a clear insight into the plans' overall progress to achieve the set objectives.

5. Linked Policies & Strategies

The University has developed several policies and strategies, already touched upon, that have clear links to this BAP. A more detailed summary of these are outlined below.

Sustainability Policy

The University recognises its impact on the environment. We need to operate in ways that ensure we meet our economic and social responsibilities whilst protecting the natural systems upon which the institution ultimately depends.

To meet its seven commitments, we undertook a baseline review to determine environmental impacts and associated objectives. The policy is fully supported by the Vice-Chancellor's Group and the Sustainability Management Board who have ultimate responsibility for setting and reviewing the objectives and targets.

Ecosystem Services Policy

The Ecosystem Services Policy outlines the importance of natural space and the benefits that can be obtained from a sensitively managed ecosystem to both staff and students and the operation of the University, alongside that of the environment. Committing to 10 targets the policy focusses on successful collaboration between the Estates and Facilities Directorate, Faculties Academics and invested groups with appropriate knowledge.

Strategic Plan 2017-2002: Making Greenwich Great II

Greenwich is in the top 3% of world universities and has progressed well in several areas within the past 5 years. However, we are not complacent as we move into the second five-year phase of the Strategic Plan. Our drive to provide the best possible education with which will equip our students to take challenges head-on remains unchanged.

Creating engaging campus environments and stimulating services are key for successful progression, both within and outside of the buildings themselves and forms one of the six strategy objectives.

Net Zero Carbon

The **UK Climate Change Act (2008)** legally binds us to an 80% carbon reduction by 2050. The Government must invest in the enabling infrastructure and professional expertise to bring about a low carbon society. We are no different in an ambition to reach Net Zero Carbon. Carbon sinks from the natural world will be one mitigating measure, increasing the value of ecosystem services.

Our new Estates Strategy is being developed; it will include this carbon target and will influence the natural environment. Taking into consideration the value these services will be crucial to our governing processes.

Health & Wellbeing Strategy

Students in Higher Education are a high-risk group for mental ill-health-based stressors including age, transition, exam and study demands in addition to external factors such as parental divorce. Our believe that whilst everyone will experience challenges, we aspire to create an open culture of support.

The therapeutic benefits of natural land are well documented. By protecting and improving these areas we are providing additional areas of relaxation, destress and enjoyment for a positive, productive university atmosphere.

6. References

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