



Lancaster University Ecology Plan

2019-2024



“We make campus an inspiring place to be”

Wildlife and Biodiversity in the Built and Natural Landscape

The Lancaster University estate comprises a rich and varied array of landscapes from the open grasslands around the field studies area, to the parkland of the campus and the rich riverside landscape alongside the Lune. It should come as no surprise that such a diverse area should be host to a fascinating range of habitats and species, many of which are already identified as important in national and local publications.

Conserving and enhancing our natural resources is essential to sustainable development and a good quality of life for everyone. Conserving our ecosystems and the biodiversity that they support is essential to our health and well-being and should be central to all our thinking and planning for a more sustainable lifestyle.

As we grow and develop, we are committed to protecting our ecological and biodiversity resources, to ensure that the health and wellbeing of all university users is guaranteed.

The Lancaster University Ecology Plan is a very important document for the University; it not only sets out clear principles for conservation and good management of our wildlife resource, but it is also written in a way that will aid and inform the work of site users and ensure benefits to all site users.

The *Lancaster University Ecology Plan* is part of a family of strategic documents that is used by Lancaster University personnel to guide management decisions about the university estate.

Key strategies, policies and working groups that compliment, or should take account of ecology and biodiversity are briefly outlined below.

Documents	Relationship with Lancaster University Ecology Plan
Strategic Plan 2020 - sets out the current strategic goals, focussing on three priorities of equal measure; research, teaching and engagement	The Ecology Plan has a complimentary approach, with a direct relationship to the three priorities set out in the Strategic Plan.
Lancaster University Masterplan 2017-2022 - proposes a holistic vision that will provide an environment which is consistent with the reputation of Lancaster University as a centre of educational excellence.	The Ecology Plan is an enabling mechanism for this vision and as well as providing guidance for all planning, design and build projects and maintenance.
Lancaster University Landscape Masterplan - to be produced. A document that will provide an essential framework for current estate management and maintenance as well as future projects.	The Ecology Plan will inform this Masterplan and help to guide its delivery.
Facilities Delivery Plan 2017-2018 - an annual delivery plan produced by the Facilities Department whose mission is to make campus an inspiring place to be.,	The Ecology Plan is an enabling mechanism for this mission. It directs the Facilities Department to achieve and deliver high ecology standards and environmental credentials for their planning, design and build projects and maintenance programme.
Lancaster University Biodiversity Action Plan 2008 - provides historical and baseline information on the habitats and species present on the University campus.	The Ecology Plan is the mechanism for the conservation of the resources identified in the Biodiversity Action Plan.

Key Departments and Working Groups	Relationship with Lancaster University Ecology Plan
<p>The Sustainability Management Group (SMG) comprises representatives from across the University, with responsibility for environmental management and environmental plan or strategy implementation. The group reports to UMAG.</p>	<p>Oversight and monitoring of implementation of Ecology Plan and supporting developmental themes. Coordination with other projects.</p>
<p>Facilities Department, encompassing, Project Development and Delivery, Grounds Management and Sport & Wellbeing.</p>	<p>Support and delivery within the key thematic areas.</p>
<p>Green Lancaster delivers student (and staff) facing environmental projects, activities and initiatives. Green Lancaster is jointly operated and managed by Facilities and Lancaster University Students Union and participates in an extensive range of environmental projects including biodiversity and ecology initiatives.</p>	<p>Support and delivery within the key thematic areas. Particularly Teaching & Research, Health & Wellbeing,</p>
<p>Health and Wellbeing Group The Group began in 2007 and involves staff and students who provide a range of wellbeing initiatives across campus.</p> <p>The groups aim is to “promote and enhance a healthy campus for all people working and living on campus”</p> <p>The main areas identified are: Staff and student health and wellbeing, health promotion activities on Campus, Physical health, Mental Health, Social spaces, fitness.</p>	<p>Support and delivery within the key thematic areas.</p>

Acknowledgements

This document has been produced by:
Ian Sturzaker – Landscape Manager Lancaster University Facilities
Pat Waring - Ecology Services UK Ltd
Janette Gazzard - Ecology Services UK Ltd

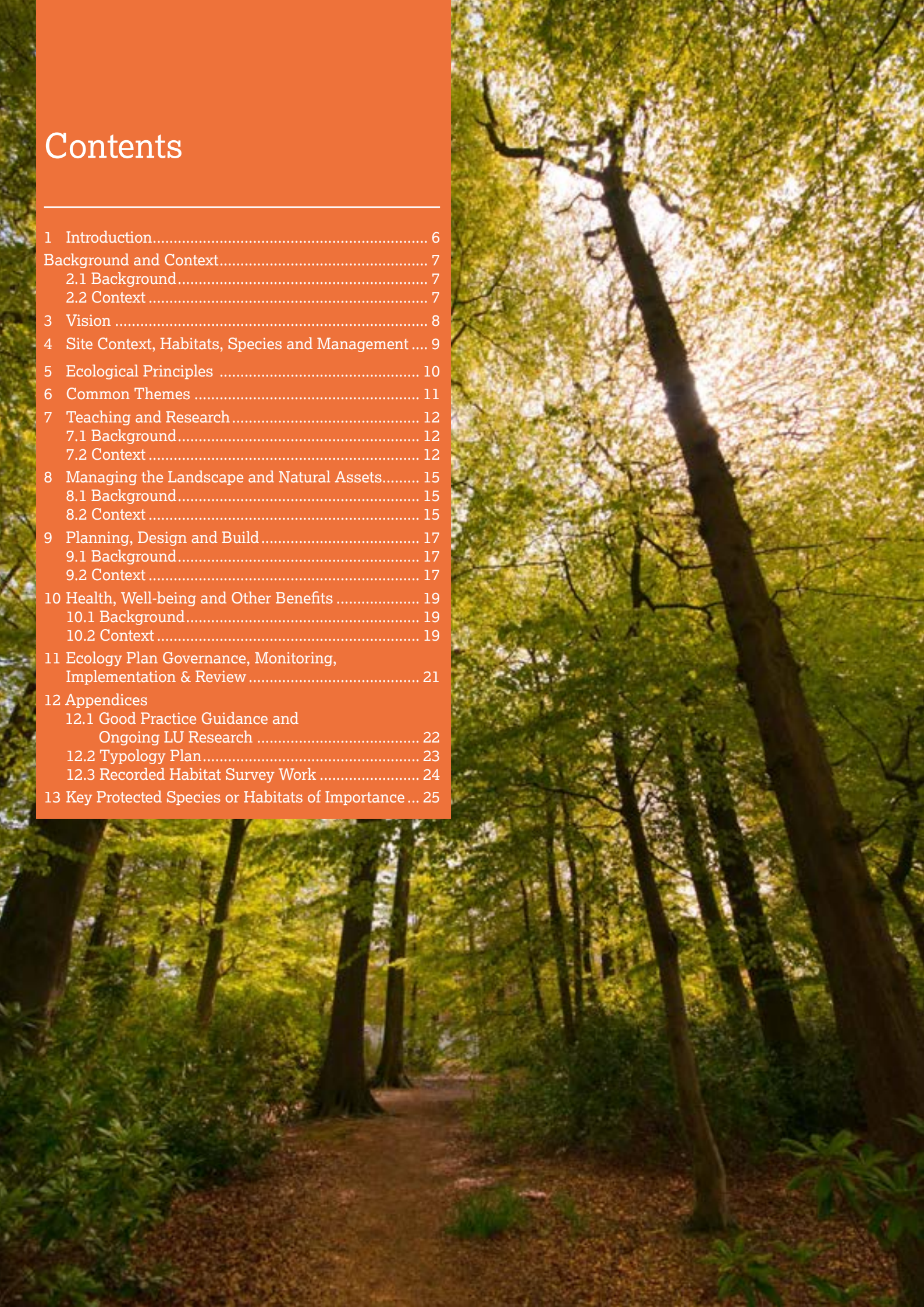
Key Consultees Engaged

Thematic Area	Consultees
Teaching & Research	<p>Dr. Ali Birkett Research Promotion Coordinator Faculty of Science and Technology, Lancaster Environment Centre</p> <p>Dr. Jess Davies Lecturer in Sustainability & EPSRC Living With Environmental Change Fellow</p> <p>Dr. Stephen Thackeray Lake Ecologist Centre for Ecology Hydrology (CEH)</p> <p>Dr. Jacob Phelps Lecturer in Tropical Environmental Change and Policy (CEH)</p> <p>Dr. Nick A Chappell Lancaster Environment Centre Various comments and thoughts received during consultation session on 28th July 2018</p>
Managing the Landscape and Natural Assets	<p>Ian Sturzaker Landscape Manager Service Delivery Facilities</p>
Campus Planning, Design and Build	<p>Jason Homan Head of Development Projects Professional Services, Facilities</p> <p>Anna Cockman Development Manager Professional Services, Facilities</p> <p>Vicki Mathews Development Manager Professional Services, Facilities</p> <p>Stuart Foy Development Manager Professional Services, Facilities</p>
Health, Well-being	<p>Professor Amanda Chetwynd Provost Vice-Chancellor's Office</p> <p>Kim Montgomery Head of Sport Professional Services, Facilities</p> <p>Dr Bob Lauder Senior Lecturer Faculty of Health and Medicine, Biomedical And Life Sciences</p> <p>Darren Axe Development Manager (Environmental Sustainability) LU Students' Union</p> <p>Leanne Bates Head of Widening Access and Outreach International Development</p>



Contents

1	Introduction.....	6
	Background and Context.....	7
	2.1 Background.....	7
	2.2 Context	7
3	Vision	8
4	Site Context, Habitats, Species and Management	9
5	Ecological Principles	10
6	Common Themes	11
7	Teaching and Research.....	12
	7.1 Background.....	12
	7.2 Context	12
8	Managing the Landscape and Natural Assets.....	15
	8.1 Background.....	15
	8.2 Context	15
9	Planning, Design and Build	17
	9.1 Background.....	17
	9.2 Context	17
10	Health, Well-being and Other Benefits	19
	10.1 Background.....	19
	10.2 Context	19
11	Ecology Plan Governance, Monitoring, Implementation & Review	21
12	Appendices	
	12.1 Good Practice Guidance and Ongoing LU Research	22
	12.2 Typology Plan.....	23
	12.3 Recorded Habitat Survey Work	24
13	Key Protected Species or Habitats of Importance ...	25



2 Background and Context

2.1 Background

As part of the Universities and development and expansion plans a Biodiversity Action Plan (BAP) was created for the campus in 2008. This plan provided for the first time an overview of the habitat structure and ecology value of the campus landscape.

The BAP produced an action plan for practical changes to landscape maintenance which was implemented and completed 2011. The document was also used to inform future development plans on campus based on habitat importance.

As the maintenance changes have been completed and further land has been acquired by the University a new document is necessary. The Ecology Plan 2019-2024 takes a more holistic approach to the management of the ecology on campus, it sets a framework for decision making and looks at a number of thematic areas that both effect the ecology along with supporting the Universities core business of teaching and research.

For each thematic area a plan will be developed which will contain a number of yearly actions to both maintain and enhance the ecological value of the campus and other areas managed and maintained by the University.

2.2 Context

As well as being a self-contained document, The Ecology Plan forms part of the overarching Facilities Sustainability Strategy. The Facilities Sustainability Strategy draws together, and puts into context all Facilities environmental sustainability strategies and plans including the Travel Plan, Behaviour Change Plan, Carbon Management Plan, Waste Plan, Energy & Utilities Plan and Ecology Plan. In addition, the Facilities Sustainability Strategy establishes the context and contribution of specific plans and strategies to the Facilities ISO 14001 Environmental Management System (EMS) and broader Facilities and University Strategies, such as the Estates Masterplan. The Facilities Sustainability Strategy comprises Facilities contribution to The University Environmental Sustainability Plan, which establishes University wide strategic environmental sustainability aims and objectives and addresses the environmental commitments made in the University Strategic Plan for 2020.

Lancaster University's Strategic Plan for 2020 sets out how the university aims to become globally significant in a range of areas, including becoming an exemplar in practice and thinking on environmental sustainability. Specifically, the strategic plan commits the University to meeting its carbon reduction and other environmental targets and becoming an exemplar in practice and thinking on environmental sustainability. The Ecology Plan is a key document in ensuring the delivery of these challenging aims and establishes overall strategic objectives, priorities and projects for ecological management and biodiversity enhancement over the period 2019-2024.



3 Vision

Lancaster University's vision for ecology and biodiversity is as follows:

We will effectively manage and conserve all our important ecological and biodiversity features and functions, to ensure the long-term benefits to wildlife and people. Our campus will be green, resilient, safe and biological diverse.

This vision will be achieved by:

- Improving our knowledge about important ecological features and functions.
- Taking account of important ecological features and functions in our decision-making.
- Managing environmental pressures effectively.
- Fully recognising and embracing the benefits of natural capital, ecosystem services and green networks.
- Allocating appropriate resources to enable delivery of the ecology plan and themes.

It is recognised that this vision can only be successful if it is supported and delivered by all those who make use of the Lancaster University estate.



4 Site Context, Habitats, Species and Management

- Descriptions of site features such as geology/soils, geomorphology, hydrology, lands use and key vegetation types/areas and principal habitat types are covered within the BAP 2008 Ian White Associates, Cameron S Crook & Associates www.lancaster.ac.uk/media/lancaster-university/content-assets/documents/facilities/grounds/BiodiversityActionPlan.pdf
- Habitats across the estate & species contained within are identified and contained both with the Landscape Typology Plan and the BAP 2008.



5 Ecological Principles

Lancaster University recognises that:

- The natural world, its biodiversity and its constituent ecosystems are critically important to our wellbeing and economic prosperity.
- Our health and wellbeing are intimately linked to the health and wellbeing of our ecosystems and biodiversity resources.
- Our ecosystems, with constituent habitats and species, need careful management to survive.

There are a number of key principles when caring for and managing ecological features; these form the basis of professional strategies, management plans and other essential documents. At Lancaster University, these principles are just as relevant, albeit on a small scale, as they are to the wider landmass of the UK.

Ecological principle	Significance/action for Lancaster University
Ecosystem function and biodiversity are essential for our well-being.	It is important to take careful account of ecosystems and biodiversity for the current and future well-being of the University estate and those who use it.
Decisions made and actions taken now will have future consequences for our ecosystems and ourselves.	It is important to take a long-term view when planning for management that affects ecosystems and biodiversity within the University estate.
Losses to ecosystem function or biodiversity will inevitably affect our environment and therefore our well-being.	It is important that ecosystem and biodiversity losses on the University estate are offset as much as possible.
Commonplace and abundant species have as much importance to ecosystems and biodiversity, as do rare landscape elements and associated species	It is important to accommodate all species and habitats, as well as ecosystem functions at Lancaster University.
Large areas of habitat offer a greater opportunity for species conservation and ecosystem function.	It is important to identify and protect areas of important ecological features at Lancaster University
Retention and development of functional landscape linkages/connections between habitats is essential for species conservation and ecosystem function.	It is important to identify and protect landscape connections and networks at Lancaster University
Invasive, non-native species are a direct threat to species conservation and ecosystem function.	It is important to identify non-native species and implement control measures at Lancaster University
Careful management of development will help to avoid, minimise or compensate for its effects on ecological processes	It is important to take full account of important ecological features when making plans for land use and management at Lancaster University
Almost all habitats and species in the UK have been influenced by human activity, and require some form of intervention for their survival.	It is important to undertake management if ecological features and functions are to be conserved within the University estate. It is important that ecosystems and biodiversity management are guided by experienced personnel, making use of up to date information, supported by sufficient resources

6 Common Themes

The plan is based around four common themes, which are closely linked.

Together, the common themes represent core areas of university business, delivery and outputs.



7 Teaching and Research

7.1 Background

Teaching and research are core areas of business for Lancaster University.

A large number of key areas of teaching and research depend on ecological and biodiversity features.

Continued investment in research and development is essential to better understand why biodiversity is changing, the consequences of these changes, to predict likely future change, and to design and test approaches to managing our biodiversity.

A better understanding of ecology and biodiversity through teaching and research will enable the university to fulfil its vision, particularly as regards demonstrating excellence, and also informing and changing practice and thinking.

7.2 Context

It is recognised that a diverse range of habitats that are safe and accessible, are an essential pre-cursor to effective teaching and research.

It is further recognised that teaching and research play a very important role in gathering and making sense of information about our ecological resources.

The use of the campus landscape enables and supports teaching and research around a number of key global challenges facing ecology, biodiversity and human interaction with the living world.

Lancaster University fully supports the approach that essential and useful information can also come from a range of non-teaching and research sources, including site users and managers.



Issues	Significance/action for Lancaster University Action
The University estate has a high value for teaching and research; this is particularly in relation to e.g. pollinator studies, nesting bird usage of the woodland, plant ecology studies and flood risk management.	The University will continue to manage the estate to support existing teaching and research; this will include maintenance of resources for pollinator studies, nesting bird usage of woodland and plant ecology studies
Teaching and research focussing on ecology and biodiversity will benefit from both continued and improved collaboration between University departments.	The University will promote and actively encourage collaboration between University teaching and research departments, to demonstrate benefits for ecology and biodiversity.
Teaching and research can help us to explore, contribute to and judge the effects on other areas within this ecology plan, including health and well-being benefits, habitat and landscape management, as well as building design and management.	The University will promote and actively encourage teaching and research which makes a positive contribution towards other areas within this strategy, including health and well-being benefits, habitat and landscape management, as well as building design and management.
The University estate provides a range of environments within which teaching and research can take place, including the field station, campus and Forrest Hills.	The University will continue to manage the estate to provide a range of environments within which teaching and research can take place.
The potential for teaching and research opportunities on the University estate has not yet been fully explored and investigated. In order for this to happen, information will be required from a wide range of site users and other sources.	The University will explore opportunities on the University estate for teaching and research. Part of this work will involve actively soliciting information from a range of sources, including all site users.
The need to continue to develop and expand teaching and research is likely to impact on ecology and biodiversity without careful guidance and control. There is a need to ensure the sustainable use of ecological and biodiversity resources.	The University will require that all teaching and research is subject to careful guidance and control, to help limit impacts on ecology and biodiversity. All teaching and research will need to give full consideration to sustainable and ethical use of ecological and biodiversity resources.
The state of biodiversity resources, with their associated values and benefits, is clearly changing. This is happening at a local level and in the wider landscape. Universities have a key role to play in meeting this challenge.	Lancaster University will encourage continued investment in research to better understand why biodiversity is changing, the consequences of these changes, to predict likely future change, and to design and test approaches to managing our biodiversity.





8 Managing Landscape and Natural Assets

8.1 Background

Part of the unique character of Lancaster University is defined by its landscape and natural assets.

Natural assets are a recognisable and distinct part of the overall university facilities. As with other facilities such as the Library Building, Sports Hall and the Spine, natural assets need investment to maintain their value and good condition.

The university estate supports a range of ecological and biodiversity features of particular significance; some of these are recognised at a national level for their wildlife value.

The ecological and biodiversity features of the university estate are of direct and indirect benefit to all site users; this includes an important contribution to stimulating and challenging teaching and research, as well as the health and well-being of staff and students. There is a direct relationship between the landscape and natural assets and the student experience, as well as impacts upon visitors e.g. during open days.

Appropriate management of landscape, ecological and biodiversity resources is essential for their continued survival and function, as well as the future sustainable development of the university.

Effective management of the landscape and natural resources (including all ecological and biodiversity features) will enable Lancaster University to fulfil its vision, particularly as regards benefits to wildlife and people.

8.2 Current situation

Management of the university's landscape, ecological and biodiversity assets is affected by a range of constraints and challenges. Some of the constraints are related to natural factors, such as the presence of non-native species. Other constraints are from resource limitations, and yet others arise from a lack of data to make informed decisions. This is preventing the achievement of full benefits.

A range of wildlife species, including flowering plants, butterflies, bats and birds, is dependent on the habitats present on the university estate throughout the year. Without the continued availability of suitable conditions (often assured by management), many species would struggle to survive.

There have been some very positive achievements with landscape and habitat management within the university estate; these include

- The completion of ongoing management of the actions within the BAP 2008.
- The University has continued to achieve the globally accredited Green Flag Award for parks and open spaces 2012-19.
- The student led Ecohub through support and partnership work with Facilities has developed into a fantastic resource for organic growing, and it's seen throughout the HE sector as an exemplar for suitability and student engagement <https://lancastersu.co.uk/green-lancaster>.

Issues	Significance/action for Lancaster University Action
There are a number of particular challenges which affect the University's ability to effectively manage and receive full benefit from its natural resources.	Statement of action contained within other issue resolutions below.
The need to continue to develop the University estate to achieve its vision, including new building development, is likely to lead to impacts on ecology and biodiversity without careful guidance and control.	<p>The University will undertake to provide appropriate mitigation and compensation for all losses of habitats and species affected by development proposals.</p> <p>The University will require all development projects to comply with national best practice guidance regarding wildlife in the built environment (refer to appendix 12.1 for examples).</p>
The presence and impact of non-native invasive species (for example Himalayan balsam and rhododendron) has already had a detrimental effect on woodlands, wetlands and other habitats. This will continue to be a significant limiting factor without appropriate management.	The University will set limits on the presence and impact of non-native invasive species (for example Himalayan balsam and rhododendron) in all areas of the University estate. Monitoring will be used to trigger management once limits are reached .
The presence and impact of other species such as mallard and hybrid ducks has environmental and health implications, as well as creating an animal welfare issue.	The University will address the issue of undesirable species numbers and impacts by careful investigation, followed by appropriate action to address all environmental and health implications, as well as animal welfare issues.
The need to comply with current legislation and guidance places obligations on the University as a land owner and manager.	The University, as a responsible land owner and land manager, will strive at all times to comply with current legislation and guidance.
A number of schemes exist which enable the University to both demonstrate and celebrate achievements in management of landscapes and natural resources.	The University will seek to demonstrate good practice and to use award schemes to help celebrate its achievements.
Although a number of ecology surveys have been undertaken, particularly with regard to proposed developments, there is generally a lack of information on which to base confident management choices and decisions.	The University will ensure that all projects affecting ecological and biodiversity resources have a clear rationale, based on a sufficient, reliable evidence base. In particular, the University will require that management decisions are made by utilising more than just project-specific data, so that wider resources and ecological functions are given full consideration.
Partly as a result of the lack of data and recognition of important habitats and species, there are currently no ecologically-focussed management plans in place to guide the maintenance of habitat value, functions and condition for important ecological and biodiversity assets.	When writing or commissioning management plans, the University will ensure that these have a sufficiently ecological focus to guide the maintenance of habitat value, functions and condition for important ecological and biodiversity assets.
The need to recognise important habitats and species which require specific, targeted management. This has been partly addressed through the creation and implementation of a Biodiversity Action Plan.	<p>Lancaster University will undertake to ensure that all important habitats receive appropriate management.</p> <p>Were additional land is purchased by the University a Phase 1 Habitat Survey will be undertaken. Were appropriate the BAP will be updated to reflect this.</p>
Without addressing the points listed above, it will not be possible to effectively monitor, measure and report on the environmental impacts of the University's activities (including operations, research and teaching) on ecological and biodiversity assets.	The University will effectively monitor, measure and report on the environmental impacts of the University's activities (including operations, research and teaching) on ecological and biodiversity assets.

9 Planning, Design and Build

9.1 Background

Throughout the UK, a wide range of wildlife is known to make use of the built environment.

Some of the species known to depend on buildings, such as bats and nesting birds, are protected by legislation; special measures are required when work impacts upon these species.

Other wildlife species may create problems due to their behaviour; special measures are required when these species occur.

Buildings set out in or close to natural greenspace are more desirable both aesthetically and to residents. In addition, significant ecological and biodiversity enhancements can be provided through created features such as rain gardens, living walls and green roofs.

The Lancaster University estate supports a range of buildings and associated landscapes, all of which have some potential to support a range of species; wildlife can occur almost anywhere throughout the built environment.

Management of the built landscape at Lancaster University has the potential for both positive and negative impacts on wildlife.

Areas of new build at Lancaster University also have the potential for both positive and negative impacts on wildlife.

Sustainable water management, and its impacts on ecology and biodiversity, is widely recognised as a key issue associated with existing and new built developments.

Artificial lighting, and its impacts on ecology and biodiversity, is widely recognised as a key issue associated with existing and new built developments.

9.2 Current situation

A range of species, including bats and birds, use university buildings throughout the year.

University buildings are particularly important during the nesting season, due to the number and diversity of nesting birds.

With sufficient time, commitment and resources, there is significant scope for ecological and biodiversity enhancements to the existing and future built environment at Lancaster University.

There have been some very positive achievements with built landscape design on the University campus to date. These include:

- Provision of bat boxes in building walls and bird boxes to the built environment and within woodlands.
- The installation of green roofs along the central spine canopies and external living walls.
- Creation of landscape sympathetic SUDS schemes to the parkland to reduce water run off.

All university developments have high potential to impact on water resources and their management.



Issues	Significance/action for Lancaster University Action
The University does not currently have a policy or associated guidance for personnel dealing with wildlife issues in the current built environment e.g. the presence of bats and nesting birds in buildings.	The University will develop guidance about wildlife issues for all personnel involved in maintenance and management of the current built environment; this will include bats and nesting birds.
The University does not currently have a policy or associated guidance for contractors and university personnel dealing with wildlife issues in development projects e.g. the unexpected discovery of bats during building development and refurbishment.	The University will require all development projects to comply with national best practice guidance regarding wildlife in the built environment. This will include pre-commencement, during development and post-development.
The range of different contractors involved in building projects means that approaches to considering and accommodating wildlife are very different, leading to an unknown number of gains and losses.	The University will require all development projects to comply with national best practice guidance regarding wildlife in the built environment. This will include pre-commencement, during development and post-development.
Only limited options are currently being pursued in terms of ecological and biodiversity enhancement in university building development projects.	The University will require all building development projects to provide clear ecological and biodiversity enhancements; these will be appropriate for the size and impacts of each development.
There is significant potential to incorporate integrated sustainable water management into new university development projects.	The University will require all development projects to fully address integrated sustainable water management.
There is significant potential to incorporate sensitive management of artificial lighting into new university development projects.	The University will require all development projects to fully address sensitive management of artificial lighting.
The overall impact and benefit of new building designs for wildlife at the University are largely unknown; there is currently only limited follow-up checks and monitoring.	The University will undertake follow-up monitoring to check the impact of wildlife-related features for all new building work since 2010, and will create a database of projects undertaken for wildlife benefit associated with buildings at Lancaster University.
Some new build projects at the University have involved loss of habitats and a range of impacts on species.	The University will undertake to provide appropriate mitigation and compensation for all impacts on habitats and species affected by development proposals.
Planning, design and the built environment have a direct link to other areas of this ecology plan. A full consideration of this will help to secure the delivery of effective teaching, research and learning, as well as landscape management and the health and wellbeing of site users.	The University will promote and actively encourage appropriate planning, design and built environments, which make a positive contribution towards other areas within this strategy, including teaching and research, habitat and landscape management, as well as health and wellbeing.

10 Health, Wellbeing and Other Benefits

10.1 Background

Health and wellbeing benefits have a wide-reaching influence across a range of areas of Lancaster University business, including education and visitor experiences.

The health and wellbeing of all those using the university estate are directly related to, and dependent on, landscapes, habitats and their component features and functions.

It is recognised that there is a relationship between the amount of health and wellbeing benefits and the time spent in safe, attractive and supportive surroundings.

Health and wellbeing have several direct and indirect impacts on teaching and research, as well as individual student success.

Improving our understanding of the links between health, wellbeing and education in particular, will help to fulfil the University vision, particularly as regards the long-term benefits to wildlife and people.

10.2 Context

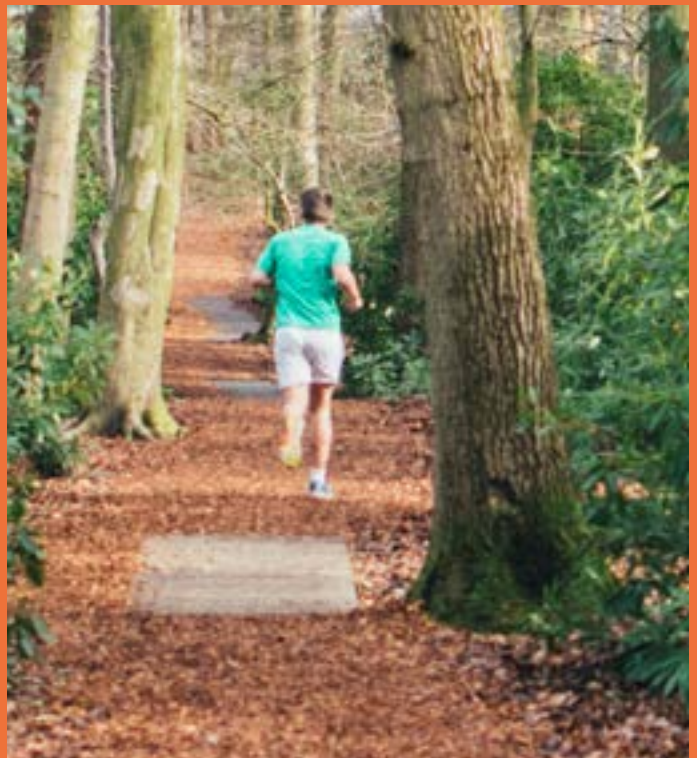
There is high potential for health and wellbeing benefits to be gained by students who are resident at the university, as this enables them to spend extended periods of time in a suitable environment.

It is recognised that health and wellbeing are key factors in teaching, research and learning.

It is further recognised that by careful management of ecological and biodiversity resources, educational establishments such as Lancaster University can have a positive influence on the whole site user experience.

The current management of Lancaster University estate has created numerous health and wellbeing benefits, including the availability of a safe, attractive and supportive environment.

It follows that sympathetic, careful management will be necessary to secure future health and wellbeing benefits.



Issues	Significance/action for Lancaster University Action
The University estate has a high value for its influence on health and wellbeing; this is particularly in relation to the presence and availability of ecological and biodiversity resources, which create a welcoming, safe and enjoyable experience.	The University will undertake to manage all its resources, including ecological and biodiversity features, to maximise their influence on health and wellbeing, and to create a welcoming, safe and enjoyable experience.
The whole of the University estate has the potential to influence health and wellbeing; effective management of the landscape is a key factor in this respect.	The University will investigate the potential for the ecological and biodiversity resources of its estate to influence health and wellbeing.
There is still the potential for health and wellbeing benefits of the University estate to be further considered and explored.	The University will explore the health and wellbeing benefits of the ecological and biodiversity resources of its estate, and seek ways of ensuring the benefits are maximised where appropriate.
Lancaster University staff and student surveys have identified that the campus landscape is very well used for health and wellbeing benefits.	The University will seek to explore opportunities of developing initiatives that benefit health & wellbeing. Opportunities exist through all the thematic areas to provide these benefits.
Health and wellbeing have a direct link to other areas of this ecology plan. A full consideration of, and commitment to achieving the full benefits of health and wellbeing, will help to secure the delivery of effective teaching, research and learning, as well as landscape management and building design.	The University will promote and actively encourage health and wellbeing, which makes a positive contribution towards other areas within this strategy, including teaching and research, habitat and landscape management, as well as building design and management.
The further development of the Lancaster University estate is likely to impact on resources that foster health and wellbeing, as well as future potential health and wellbeing benefits. There is therefore a need to ensure that health and wellbeing are given full consideration in all land development projects.	The University will require all development projects to comply with national best practice guidance regarding the maintenance, creation and suitable management of its ecological and biodiversity resources for health and wellbeing. Examples of national best practice guidance include



11 Ecology Plan Governance, Monitoring, Implementation and Review

In respect of Governance, responsibility for management and delivery of the Ecology Plan resides with the University Landscape Manager, based in Facilities. Progress in implementing the Ecology Plan is reported via Facilities line management and the Sustainability Management Group.

Ecology Plan objectives and targets are reviewed and updated each year, and incorporated into Facilities annual ISO 14001 EMS objectives and targets. Delivery of objectives and targets is monitored via the ISO 14001 EMS and reviewed by the Sustainability Management Group.

The Ecology Plan is implemented through annual action plans comprising specific ecology and biodiversity projects and initiatives and will be split into specific thematic areas. Action Plans are produced annually as separate document and set out the projects, initiatives and activities designed to support delivery of the Ecology Plan each academic year. Typically this might include a wide range of initiatives such as implementation of the Woodland Management Plan, establishing wildflower meadows and other biodiversity habitats or biodiversity related research and student engagement projects.

A review of the Ecology Plan will be scheduled prior to 2024 (the final year of its 5 year duration) or in advance of that date if other factors indicate an earlier review date is appropriate.



12 Appendices

12.1 Good Practice Guidance and Ongoing LU Research

Teaching and Research

Current NERC-funded research which is using the campus landscape is demonstrating a greater potential for trees to re-evaporate rainfall during large storms and so leave less to produce floods

www.lancaster.ac.uk/lec/sites/qnfm

The River Eden Demonstration Test Catchment (EdenDTC) is a Defra funded research project. The aim of the project is to assess if it is possible to cost effectively mitigate diffuse pollution from agriculture whilst maintaining agricultural productivity.

www.edendtc.org.uk

Managing Landscape and Natural Assets

assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/320857/Cross-compliance_Habitats_and_Landscape_Features_v1.0.pdf

Planning, design and build for Ecology and Biodiversity

assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/779764/NPPF_Feb_2019_web.pdf

assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/11481/143792.pdf
<https://cieem.net/i-am/current-projects/biodiversity-net-gain/>

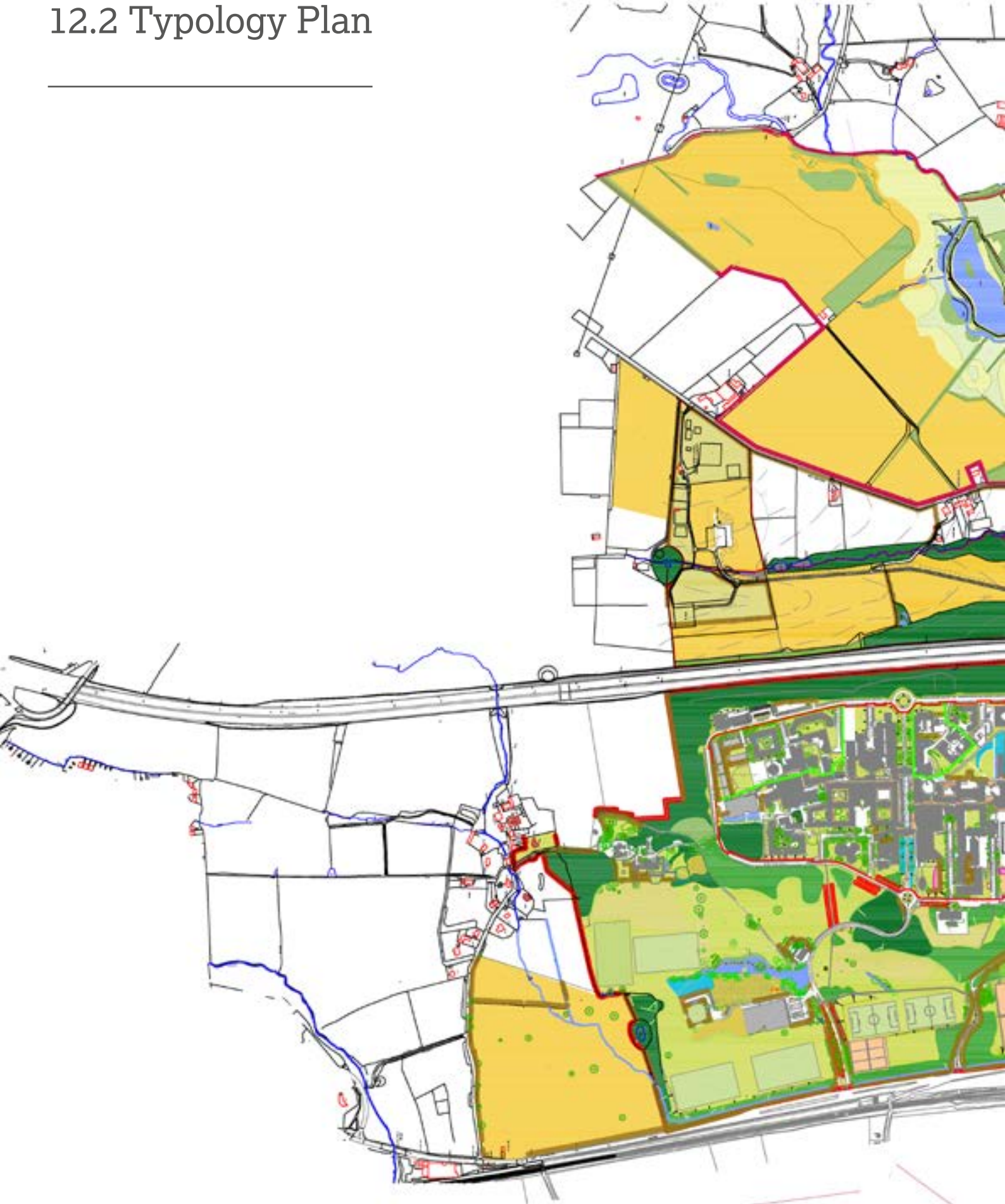
Health and Wellbeing

eprints.brighton.ac.uk/8192/1/TakingWellbeingForward.pdf (p37)



www.ucl.ac.uk/news/2018/sep/green-urban-space-may-be-good-childrens-brains



12.2 Typology Plan





-  Broadleaved woodland (Semi Natural)
-  Broadleaved woodland (Plantation)
-  Coniferous woodland
-  New woodland
-  Mixed woodland
-  Individual trees
-  Sports pitch
-  Artificial sports pitch
-  Amenity grassland
-  Semi improved natural grassland
-  Unmown margin to wood
-  Pasture
-  Shrubs/herbaceous plants
-  Bulb planting
-  Native wildflower grassland
-  Locally imported species
-  Water body
-  Aquatic planting
-  Himalayan balsam
-  Japanese knotweed
-  Hedge
-  Golf course green
-  Golf course fairway
-  Golf course rough/semi rough
-  University land boundaries
-  UPP boundry line

12.3 Recorded Habitat Survey Work

Phase 1 Habitat Survey of Main Campus	2007	Cameron Crook Associates	Sharepoint – to be developed
Bat Mitigation Strategy – Ash House	2015	Ecology Services UK Ltd	Sharepoint – to be developed
Extended Phase 1 Habitat Survey & Preliminary Ecological Assessment Spine Refurbishment Project	May 2015	Cameron Crook Associates	Sharepoint – to be developed
Lancaster University Innovation Campus Construction Environmental Management Plan (Condition No. 5)	2016	White Young Green	Sharepoint – to be developed
Phase 1 Habitat Survey Forrest Hills, Hazelrigg Fields Station	2017	Cameron Crook Associates	Sharepoint – to be developed
Preliminary Ecological Appraisal Proposed New Residency George Fox	April 2018	CAD-CAPTURE	Sharepoint – to be developed
Phase 1 Habitat Survey Proposed New Residency George Fox	May 2018	Ecology Services UK Ltd	Sharepoint – to be developed
Bats: Building Inspection & Activity Surveys - Bailrigg House	Oct 2018	Simply Ecology Limited	Sharepoint – to be developed

NB There are a number of other surveys located within individual project files

13 Key Protected Species or Habitats of Importance

It is recognised that the habitats within Lancaster University estate are suitable to support protected and/or other important species.

The species listed below have been recorded in recent years within the University Estate. These species are legally protected under UK and European Law and/or are considered rare and threatened and are listed as Species of Principal Importance under Section 41 (S41) of the 2006 Natural Environment and Rural Communities (NERC) Act.



Priority Species	Legal Protection	Recorded Location
Amphibians		
Common Toad <i>Bufo bufo</i>	Section 41 under NERC 2006	Forrest hills
Nesting Birds		
Swallow <i>Hirundo rustica</i>	Wildlife and Countryside Act 1981 (as amended)	Main campus Chancellors Wharf Forrest Hills
House martin <i>Delichon urbicum</i>	Wildlife and Countryside Act 1981 (as amended)	Main campus Chancellors Wharf
Oystercatcher <i>Haematopus ostralegus</i>	Wildlife and Countryside Act 1981 (as amended)	Main campus Forrest Hills
Mallard <i>Anas platyrhynchos</i>	Wildlife and Countryside Act 1981 (as amended)	Main campus Forrest Hills
House sparrow <i>Passer domesticus</i>	Wildlife and Countryside Act 1981 (as amended) Section 41 under NERC 2006	Main campus Chancellors Wharf Forrest Hills
Hedge Accentor <i>Prunella modularis subsp. occidentalis</i>	Wildlife and Countryside Act 1981 (as amended) Section 41 under NERC 2006	Main campus Forrest Hills
Common Starling <i>Sturnus vulgaris subsp. Vulgaris</i>	Wildlife and Countryside Act 1981 (as amended) Section 41 under NERC 2006	Main campus Chancellors Wharf Forrest Hills
Song Thrush <i>Turdus philomelos subsp. Clarkei</i>	Wildlife and Countryside Act 1981 (as amended) Section 41 under NERC 2006	Main campus Forrest Hills
Northern Lapwing <i>Vanellus vanellus</i>	Wildlife and Countryside Act 1981 (as amended) Section 41 under NERC 2006	Forrest Hills
Mammals		
Hedgehog <i>Erinaceus europaeus</i>	Section 41 under NERC 2006	Main campus
Brown hare <i>Lepus europaeus</i>	Section 41 under NERC 2006	Main campus Forrest Hills
Otter <i>Lutra lutra</i>	European protected species (EPS) Wildlife and Countryside Act 1981 (as amended) Section 41 under NERC 2006	Main campus Forrest Hills
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	European protected species (EPS) Wildlife and Countryside Act 1981 (as amended) Section 41 under NERC 2006	Main campus Forrest Hills
Common pipistrelle <i>Pipistrellus pipistrellus</i>	European protected species (EPS) Wildlife and Countryside Act 1981 (as amended)	Main campus Forrest Hills
Fish		
River Lamprey <i>Lampetra fluviatilis</i>	Section 41 under NERC 2006	Forrest Hills



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If you wish to discuss any aspect of the University's Ecology Plan, please contact:

Carbon, Environment & Sustainability manager

Facilities - Operations

Lancaster University, Lancaster LA1 4YW

Tel: 01524 593333

E-mail: facilities.helpdesk@lancaster.ac.uk