The University of Manchester: Living Campus Plan

A living campus where we work alongside nature and nature works alongside us
The Living Campus Plan has been developed as part of the University’s Environmental Sustainability Strategy, specifically to address the challenges of a growing urban campus alongside the opportunities a healthy environment provides for people and nature.

It is envisaged that The Living Campus Plan will support the development of The University of Manchester estate that is memorable and distinctive with a strong sense of place, which contributes to the health and wellbeing of staff, students, visitors and the surrounding local community. It includes opportunities for wildlife, including bees, butterflies and birds, and other biodiversity, and aims to promote the development of an estate that embraces nature and provides high quality spaces for educational, research, cultural and recreational activities.

The Plan includes actions and programmes for delivery during 2016-2022, to help meet targets detailed. In support, a series of theme specific action plans will be developed and reported annually.

Some activities are already underway. This Plan looks to continue with these activities and build on their success, and in some instances learn lessons.

This Plan has been developed for the entire University of Manchester estate, including student residences, Jodrell Bank and Dalton Cumbrian facility, and aligns with University and Manchester City Council strategy.

Executive summary

Delivery area | Topic area | Baseline | 2022 target
--- | --- | --- | ---
Key spaces | Brown roofs m$^2$ | 2014/15 90m$^2$ | Two additional projects by 2022
Key spaces | Green walls m$^2$ | 2014/15 447m$^2$ | Two additional projects by 2022
Key species | Trees | 2014/15 9,189 | To increase on baseline by planting two trees for every one removed
Key activities | Staff active travel | 2014/15 22% | 25%
Key activities | Student active travel | 2014/15 37% | 39%
Key activities | Living campus champions | 2014/15 N/A | 26 (10% of registered sustainability champions)
Key activities | Biodiversity-related community projects | 2014/15 N/A | At least one project completed with the local community
Key activities | Staff wellbeing | 2015/16 49 58 | Figures and targets derived from wellbeing valuation methods developed by University academics, based on measuring building level wellbeing.
Key activities | Student wellbeing | 2015/16 55 60 |
Key activities | Value of wellbeing$^2$ | 2015/16 £67.8m £79m |

$^1$Methodology uses a multi-item scale instrument to measure wellbeing outcomes for staff and student populations on campus environments in a quantitative manner.

$^2$There are no current examples of best practice scores to compare The University of Manchester. However, previous research, applying the instrument in the built environment, suggests that very high quality, user-centred building design can reach wellbeing scores of £3 for the building users.

$^3$Represents the value of the green spaces on campus for staff and student wellbeing, based on financial proxy description ‘value of relief from depression or anxiety’.
### Summary of actions and programmes

<table>
<thead>
<tr>
<th>Actions and programmes</th>
<th>Key spaces</th>
<th>Key species</th>
<th>Key activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>The University of Manchester living campus gardens Identification and design of areas across campus for ornamental planting that has visual impact and benefits wildlife.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>The University of Manchester tree plan and trail Implementation of The University of Manchester’s Tree Plan and design and delivery of The University of Manchester’s tree trial, which includes for a interactive map and opportunities for sharing information/experiences.</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Progression of Campus Masterplan green spaces Continued support for greenspace associated with capital programme new builds and large scale refurbishments, and delivery of the University’s Landscape Masterplan.</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provision and enhancement of habitat spaces programme Development of action plans for identified bird species and pollinators that link into existing planting and landscaping schemes with enhancement measures.</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Habitat and species survey and engagement programme Development of surveys to support data collection, understanding of impact and opportunity to engage staff, students and local communities, as well as relevant externals bodies/organisations.</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Active travel programme To continue to support cycling, running and walking initiatives and infrastructure.</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living Campus Champions To establish a network of Living Campus Champions and provide opportunities for them to work on living campus projects, specifically living campus gardens.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Green Impact and Green Impact Project Plus To continue to provide opportunities to support Green Impact and to promote living campus initiatives as possible Project Plus projects.</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Ardwick Green Spaces Group To work with Manchester City Council and local residents supporting their green spaces project.</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Living campus research projects To support a process that links living labs and the living campus, including the means to disseminate research/findings.</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethical Grand Challenges To continue to provide opportunities to support the Sustainability Challenge, through learning, engagement and volunteering.</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10,000 Actions To continue to provide opportunities to support targeted actions through learning, engagement and volunteering.</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Plan has been developed in collaboration with the Environmental Sustainability Team, the Living Campus Group (chaired by Professor Amanda Bamford, Professor of Plant Science) and colleagues across the Directorate of Estates and Facilities, Faculty of Humanities, Directorate for the Student Experience and Cultural Institutions.

Reports will be presented to the Environmental Sustainability Leadership Group. The plan will be reported as part of The University of Manchester Annual Sustainability Report, which will be presented to the University’s Senior Leadership Team, and will be available for both internal and external audiences.
1. What is The Living Campus Plan?

The campus is changing. The University of Manchester’s ‘Living Campus Plan’ (the Plan) has been developed in the context of this change to create and capitalise on opportunities, and to establish a sustainable estate that matches our values around social responsibility, in which environmental sustainability is embedded. The Plan recognises our dependency on the natural environment and the services it provides and seeks to support these services and benefits across campus, in terms of providing:

• High-quality greenspace with room to learn, think and connect with people in a way comparable to other facilities, such as Alan Gilbert Learning Commons;

• Preventative and restorative health benefits, with opportunities to exercise or just observe nature and the changing seasons;

• Natural resilience to climate change, especially resilience to more frequent and more extreme weather patterns;

• Support for biodiversity; and,

• Space, habitats and corridors for wildlife.

The Plan draws on the relationship between the natural environment, biodiversity and health and wellbeing, and provides the basis for actions and programmes to deliver objectives and meet targets.

2. Why does it matter?

Providing green infrastructure

Green infrastructure is associated with a host of recognised benefits, some of which are detailed in Table 1 (adapted from Manchester’s Great Outdoors: a Green and Blue Infrastructure Strategy for Manchester 2015–25).

Table 1: Benefits of green infrastructure

<table>
<thead>
<tr>
<th>Direct benefit to The University of Manchester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity of staff and students</td>
</tr>
<tr>
<td>Health and wellbeing</td>
</tr>
<tr>
<td>Recreation and leisure</td>
</tr>
<tr>
<td>Quality of place</td>
</tr>
<tr>
<td>Land and biodiversity</td>
</tr>
<tr>
<td>Flood alleviation and management</td>
</tr>
<tr>
<td>Climate change adaptation and mitigation</td>
</tr>
<tr>
<td>Economic growth and investment</td>
</tr>
<tr>
<td>Land and property values</td>
</tr>
<tr>
<td>Tourism</td>
</tr>
<tr>
<td>Products from the land</td>
</tr>
</tbody>
</table>

For clarity and in the context of this Plan, Table 2 references the definition of green infrastructure, as per Manchester City Council’s strategy, alongside the University’s interpretation, and uses the term greenspace interchangeably. All types, irrelevant of size, are important “to create a network whose total value is greater than the sum of the individual parts, as part of the wider landscape of Greater Manchester and beyond”.

1 Provisioning services such as food, water and fuel, regulating services such as climate regulation and flood control, supporting services such as soil formation and water cycling and cultural services such as recreation and cognitive development for example.

2 Convention on Biological Diversity defines biodiversity as the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

3 Manchester’s Great Outdoors: a Green and Blue Infrastructure Strategy for Manchester 2015–25
Table 2: Definitions of green and blue infrastructure for Manchester and The University of Manchester

<table>
<thead>
<tr>
<th>Manchester City Council</th>
<th>The University of Manchester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Open spaces</strong></td>
<td>Parks, woodlands, informal open spaces (including amenity grass areas, allotments), nature reserves, lakes and reservoirs, historic sites and natural elements of built conservation areas, civic spaces and accessible countryside, outdoor sports facilities (with natural surfaces).</td>
</tr>
<tr>
<td><strong>Linkages</strong></td>
<td>River valleys and canals, pathways, cycle routes, tram routes and railway lines – both used and disused.</td>
</tr>
<tr>
<td><strong>Networks of “urban green”</strong></td>
<td>The collective resource of private gardens, pocket parks, street trees, verges, greenroofs and green walls.</td>
</tr>
<tr>
<td></td>
<td>Parks, woodlands, informal open spaces (including amenity grass areas), historic sites and natural elements of built conservation areas, ponds, civic spaces and outdoor sports facilities (with natural surfaces).</td>
</tr>
<tr>
<td><strong>Source:</strong></td>
<td>Manchester’s Great Outdoors: a Green and Blue Infrastructure Strategy for Manchester 2015-25</td>
</tr>
</tbody>
</table>

Since 2012 the University has embarked on an ambitious 10-year, £1 billion Campus Masterplan. This large-scale construction programme has inevitably resulted in the loss of some campus greenspace. This Plan can help to mitigate further loss, enhance existing areas and support the creation of aesthetically pleasing and biodiverse spaces.

Resilience to the predicted impacts of climate change

Climate change is already happening on a global scale, with human activity continuing to exacerbate impacts. The last decade showed the highest global average surface temperatures since records began, about 0.8°C above pre-industrial levels. People and nature are already suffering the impacts of climate change, including: extreme weather events; flooding; pests and pathogens spreading; stresses on water resources; changes in the distribution of species; and changes in the composition of plant and animal communities. Without more urgent action, climate change will have significant consequences for human welfare and ecological systems, threatening our very survival.

The Campus Masterplan provides a great opportunity for the University to address these climate change risks and build in resilience for the future through the design of buildings and the inclusion of green infrastructure.

Halting the loss of biodiversity

Nearly two out of three (60%) UK animal and plant species are rarer than they were 50 years ago and one in ten species are thought to be under threat of extinction. Threats to UK biodiversity include habitat destruction, degradation and fragmentation, climate change, pollution, over-exploitation and invasive, non-native species. Species numbers have declined, and in some cases species have become extinct. However, there is still hope, as nature recolonises cities and verges and sensitive urban design facilitates its survival.

The University is in a privileged position to support biodiversity by providing room for it to thrive, helping to repair and reconnect habitats and deliver education and research to encourage its understanding and protection on a local and global scale.

Supporting health and wellbeing

Nature and a healthy environment are essential for our health and wellbeing. There is a large and growing body of evidence suggesting that contact with nature positively affects physical health and mental wellbeing: a number of key benefits are outlined in Table 3. High-quality natural environments can also help attract and retain the best talent and positively enhance staff and student experience.

“Where in 1945 it was thought that the way to solve the problem was to create wildlife parks and nature reserves that is no longer an option. They are not enough now. The whole countryside should be available for wildlife. The suburban garden, roadside verges...all must be used”

Sir David Attenborough, 2014.
Improving wellbeing has a link not only to feeling better but also to functioning better. It helps with physical health, performance at work and study and quality of life, therefore supports staff and student mental health, and helps to reduce stress and sickness absence.

By delivering accessible, connected, safe and clean greenspace and by creating and sustaining an active travel infrastructure and culture, this Plan can help contribute to the improved health and wellbeing of staff, students and the wider community.

2. Why does it matter?

Table 3: Key health and wellbeing benefits of contact with nature

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction in anxiety and stress</td>
<td>Improvement of mood</td>
</tr>
<tr>
<td>Improvement of self-esteem</td>
<td>Improvement of psychological wellbeing</td>
</tr>
<tr>
<td>Improvement in attention and concentration</td>
<td>Reduction in symptoms of ADHD in children</td>
</tr>
<tr>
<td>Increase in cognitive restoration</td>
<td>Improvements to physical health</td>
</tr>
<tr>
<td>Promotion of physical activity</td>
<td>Reduction of crime rates</td>
</tr>
<tr>
<td>Increased immunity</td>
<td>Improved perceptions of general health</td>
</tr>
<tr>
<td>Increased social context</td>
<td></td>
</tr>
</tbody>
</table>

Source: Wellbeing benefits from natural environments rich in wildlife, 2015

The University is nestled in a locality with a poor health profile, high levels of deprivation, a life expectancy lower than the average across England and escalating health and social care needs. Manchester City Council’s health and wellbeing strategy highlights the importance of healthy households and healthy neighbourhoods, subscribing to the National Economic Foundation’s Five Ways to Wellbeing that promotes an active, healthy lifestyle. Building on this methodology the University has identified the Manchester Ways to Wellbeing as the first stage of a four-year roll-out of the Wellbeing Strategy. Manchester Ways to Wellbeing identifies six actions to build into the day-to-day lives of staff and students in order to feel good and function well:

- **Connect**: Make contact with the people around you.
- **Learn and discover**: Make time to try something new.
- **Be active**: Go for a walk or run. Step outside. Cycle.
- **Take notice**: Lift your eyes from the next deadline or demand. Catch sight of beautiful things.
- **Give**: Do something for a friend, colleague or stranger.
- **Be healthy**: Look after yourself, stay safe, respect your body, make healthy choices.

“Connections between health and wellbeing and green infrastructure provide an important opportunity to deliver better outcomes for residents and reduce dependency on strained public sector services”

Manchester’s Great Outdoors: a Green and Blue Infrastructure Strategy for Manchester, 2015-2025

By delivering accessible, connected, safe and clean greenspace and by creating and sustaining an active travel infrastructure and culture, this Plan can help contribute to the improved health and wellbeing of staff, students and the wider community.

1 Manchester City Council, NICE ‘A Healthier Manchester: Our Vision, Your Health’, 2015
2 www.fivewaystowellbeing.org
3 www.sport.manchester.ac.uk/fitness/wellb
3. Strategic fit

The Plan includes compliance with European and UK Legislation that exist to protect the natural environment. Legislation applicable to The University of Manchester is detailed in Appendix 1. The Plan also draws upon a number of University and Manchester City Council strategic documents. (Table 4).

The Plan also recognises that University operations and day-to-day business impacts on the natural environment. Therefore, the Plan aligns with the 2016 Environmental Sustainability Strategy and 2016 Sustainable Resources Plan to support positive environmental change whilst at the same time minimising negative environmental impacts.

Table 4: Key strategic documents

<table>
<thead>
<tr>
<th>The University of Manchester</th>
<th>Manchester City Council</th>
</tr>
</thead>
<tbody>
<tr>
<td>The University of Manchester Estates Masterplan 2012-2022 (referred to as Campus Masterplan throughout this Plan)</td>
<td>Biodiversity Action Plan 2012-2016, Valuing Manchester’s Nature</td>
</tr>
<tr>
<td>The University of Manchester Landscape Masterplan, March 2014</td>
<td>Manchester’s Great Outdoors, a Green and Blue Infrastructure Strategy for Manchester, July 2015</td>
</tr>
<tr>
<td>The University of Manchester Directorate of Estates and Facilities EPM PM7 – Code of Practice for Design Teams, June 2014</td>
<td>Manchester Health and Wellbeing, Joint Health and Wellbeing Strategy, January 2013</td>
</tr>
<tr>
<td>The University of Manchester: Extreme Weather and Climate Change Impacts, Risks and Adaptation Responses, January 2015</td>
<td></td>
</tr>
<tr>
<td>The University of Manchester Tree Plan, February 2016</td>
<td></td>
</tr>
<tr>
<td>The University of Manchester Tree Policy, February 2016</td>
<td></td>
</tr>
<tr>
<td>Sustainable Urban Drainage Scoping Study 2016</td>
<td></td>
</tr>
</tbody>
</table>

The Plan also recognises that University operations and day-to-day business impacts on the natural environment. Therefore, the Plan aligns with the 2016 Environmental Sustainability Strategy and 2016 Sustainable Resources Plan to support positive environmental change whilst at the same time minimising negative environmental impacts.

Figure 1: The University of Manchester’s Landscape Masterplan – green infrastructure

4. Where we are

The University’s campus continues to grow reflecting our vision to become one of the top 25 research universities in the world. However, space for growth is limited resulting in greenspace being lost for new and extended buildings. On the University’s main campus (north and south) greenspace has been lost, largely attributed to the Campus Masterplan, with further losses expected until 2022. Interspersed pockets of urban green remain and the Landscape Masterplan (Figure 1) details plans for additional green infrastructure, including the pedestrianisation of Brunswick Street creating Brunswick Park.

A number of biodiversity assessments of the University have been completed recording the presence of a variety of birds, mammals, invertebrates, butterflies and bees. The campus also supports a varied stock of mature trees of high local conservation value. However, the assessments also show there are large areas with little biodiversity value owing to the prevalence of built structures with paved, concreted and tarmac surfaces.

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10 www.sustainability.manchester.ac.uk/strategy
11 www.masterplan.manchester.ac.uk
15

4. Where we are

Engaging with the living campus
The transformation of the Oxford Road corridor is well underway and will deliver faster, more reliable bus services while improvements to pedestrian and cycle facilities along the road will make it easier and safer for people to walk and cycle. The University has witnessed an increase in the number of staff and students cycling and walking, and has recently seen the establishment of a run-commute group that is growing in popularity.

Staff and students continue to engage with the living campus through both active engagement, such as using the campus as a living lab for biodiversity projects, and passive engagement, from informal socialising to organised events. A recent survey to understand how staff use and appreciate greenspace found that over 60% enjoy spending time on campus, approximately 40% felt calm and relaxed or refreshed and revitalised and 50% take time to appreciate their surroundings. The wellbeing outcomes for the University were recorded using a quantitative scale, with staff scoring 50 out of 75 or 66% overall.

Extreme weather and climate change impacts
Recently Manchester has been subject to extreme weather events, including excessive rain which has led to some localised flooding. University researchers completed a report to better understand how these issues could impact our estate. Table 5 summarises insights and recommendations that emerged from the project.

Other University sites
The University also has rural sites, including Jodrell Bank in Cheshire and Dalton Cumbrian Facility in Cumbria. Jodrell Bank includes biodiverse areas, beehives and a substantial arboretum with key local and global specimens. Infrastructure to encourage cycling has recently been upgraded with the number of cyclists to the site increasing. Dalton Cumbrian Facility is one of a number of buildings found on a business park which includes formal and informal planting, waterbodies and infrastructure to support cyclists.

Although this Plan largely focuses on the Manchester campus (including the residences, The Whitworth and its gardens, and Manchester Museum), the principles are transferable to Jodrell Bank and Dalton Cumbria. Moving forward, addendums specific to the University rural estate will be developed.

Table 5: The University of Manchester climate change resilience: insights and recommendations

<table>
<thead>
<tr>
<th>Insights:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flooding is the key risk currently facing the estate. Wetter winters and more extreme downpours across the year are projected for the coming decades, suggesting that flood risk will intensify.</td>
</tr>
<tr>
<td>There is currently a low risk of heat stress to the estate, although projections suggest this risk will increase with rising temperatures over the coming decades.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recommendations:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Look for opportunities to expand green cover, particularly within the south campus and in areas prone to surface water flooding.</td>
</tr>
<tr>
<td>Where buildings are to be refurbished, take the opportunity to consider adaptation options to build resilience to flooding and heat stress, such as protecting and increasing green cover, especially where they are identified as being at risk from these hazards.</td>
</tr>
<tr>
<td>Request that project teams responsible for new builds take weather and climate risk into consideration. Project teams should demonstrate how buildings will be resilient to future risks whilst not exacerbating risk to other buildings on the estate.</td>
</tr>
<tr>
<td>Update emergency and contingency plans to reflect knowledge of weather and climate risks, particularly for buildings shown to be at high risk from flooding.</td>
</tr>
<tr>
<td>Support student projects to build knowledge and awareness of weather and climate risks and adaptation responses on the estate.</td>
</tr>
</tbody>
</table>

Source: The University of Manchester: Extreme Weather and Climate Change Impacts, Risks and Adaptation Responses, January 2015

5. Where we want to be

Far from being ‘the space between’, the University’s greenspace and public realm should be viewed as a valuable resource that promotes the natural environment to allow staff and students to prosper and the full range of benefits from nature realised.

The successful implementation of this plan will facilitate a university that is welcoming and enjoyed by all supporting the health and wellbeing of staff, students, the local community and visitors. The University will contribute meaningfully to the realisation of local and national efforts relating to particular species, habitats, communities and sustainable cities. The University estate will be durable and resilient against threats, notably against changes in the local climate, and will support and enhance nature, presenting opportunities for (rather than hindering) future development and providing spaces and corridors for our wildlife to flourish. The estate will connect with our history and heritage and through rich and attractive space present opportunities for events and ceremonies in keeping with our aspirations as a world-leading research university.
6. Delivery

The Plan will be delivered through the following themes:

- Baselines have been calculated, targets set and key actions and programmes identified for each theme, to cover the period until 2022. Some activities are already underway, such as implementing the University’s Tree Plan and Tree Policy (two trees for every one removed). These activities will continue and/or be built upon. For those yet to start, actions plans will be developed.

For further information please contact es@manchester.ac.uk
6. Delivery

The Plan promotes measures that will enhance the quality and function of green infrastructure, improve habitat value and connectivity for wildlife, increase health and wellbeing opportunities and provide resilience to future implications of climate change. Robust management plans are essential for all key spaces to ensure their success long into the future.

The key spaces element of this Plan includes greenspace, trees and planting (ornamental and informal).

**KEY SPACES**

**Trees**
- Retain as many trees as possible.
- Continue to support the Tree Policy by planting two trees for every one removed.
- Increase the tree cover within the University’s landholding and in targeted areas of the local community.
- Design spaces to support adaptation to the impacts of climate change.

Mature trees on campus are regarded as having high nature conservation value and are seen as one of the campus’ greatest assets (Figure 2). Mature tree cover cannot be recreated overnight and should be carefully managed. However, as a result of current developments, a number of trees have been lost. A Tree Plan and Policy has been developed to address this loss and to build on the benefits of trees, including local climate control (shading, cooling, sheltering), increasing biodiversity, rainwater attenuation, physiological and psychological wellbeing, improving air quality and noise absorption. The Tree Plan also includes for The University of Manchester’s tree trail to support engagement and understanding of trees on campus, and to promote opportunities for health and wellbeing.

In order to support tree cover across campus: tree removal for contractor cabins or temporary accommodation should be avoided unless there are no other practical alternatives; and, where hedgerow exists, these should look to be retained alongside the addition of soil and fruit bearing tree species.

**Greenspace**
- Improve the quality, function and scale of green infrastructure across campus.
- Design spaces to support adaptation to the impacts of climate change.

The main campus is dominated by amenity grasses, managed and maintained for recreational use. Increasing plant species and structural diversity will have a wide range of biodiversity benefits. There is also opportunity to add to the existing number of greenroofs and green walls.

Greenroofs and green walls provide several important functions, such as helping to manage surface water runoff in an area with lots of impermeable surfaces, reducing solar gain, providing health benefits and supporting local wildlife by providing shelter and food. Greenroofs and walls are encouraged across campus and are subject to procedures as outlined in The University of Manchester Greenroof and Green Wall Policy and Guidance.12

**Ornamental planting**
- Increase the diversity of planting across campus, prioritising species that benefit wildlife and prolong the flowering season.
- Reduce pesticide and herbicide use.
- Find an alternative to using peat on campus and work towards phasing out peat.

Ornamental planting across campus includes shrubs, ground cover, annuals and perennials in the ground and in planters, and formal and informal schemes. Planting creates key routes across campus and provides visual impact. Opportunities exist to develop ‘living campus garden spaces’ and planting across campus. Areas will be defined during 2017 and will be designed to include species that create a visual impact but which also benefit wildlife. Focus will be on pollen and nectar rich species, varieties that prolong the flowering period to support invertebrates and species with seeds and berries to support birds. Although the establishment of traditional annual wildflower and grass meadows is not a current priority for the University, there is opportunity to encourage planting schemes that include perennials interspersed with wildflowers and woodland bulbs.

**Source:** The University of Manchester Landscape Masterplan, 2014

**The key drivers for any planting scheme are:**
- Provision of food for wildlife;
- Aesthetics, structural diversity, colour and prolonging the flowering season; and,
- Ease and cost of maintenance.

12 www.sustainability.manchester.ac.uk/strategy

**Figure 2: The University of Manchester tree cover (2012)**

In addition, there may be opportunities to manage ‘meanwhile’ sites prior to construction and post-demolition and include temporary or permanent waterbodies to provide habitat for wildlife, resilience against the predicted impacts of climate change and for aesthetic value, for example raingardens near to downpipes (Figure 3). Further work is required in this area.

**Figure 3:** Raingardens near to downpipes

Ladybird pupa on Sedum reflexum (Crooked Yellow Stonecrop).

Dactylorhiza purpurella (Northern Marsh Orchid) found growing by Graphene (Picture: Dr Filipa Cox)
Key spaces, targets and baselines

<table>
<thead>
<tr>
<th>Topic area</th>
<th>Baseline</th>
<th>2022 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown roofs m²</td>
<td>2014/15</td>
<td>90m²</td>
</tr>
<tr>
<td>Green walls m²</td>
<td>2014/15</td>
<td>447m²</td>
</tr>
<tr>
<td>Trees</td>
<td>2014/15</td>
<td>9,189</td>
</tr>
</tbody>
</table>

Initial work has been undertaken to quantify the amount of campus green space, greenroof coverage and the use of peat, pesticides and herbicides and further work is planned to calculate targets for improvement.

Key spaces, actions and programmes:

- The University of Manchester living campus gardens: Identification and design of areas across campus for ornamental planting that has visual impact and benefits wildlife.
- The University of Manchester Tree Plan and trail: Implementation of The University of Manchester’s Tree Plan and design and delivery of The University of Manchester’s Tree Trail, which includes an interactive map and opportunities for sharing information/experiences.
- Progression of Campus Masterplan greenspaces: Continued support for greenspace associated with capital programme new builds and large scale refurbishments, and delivery of the University’s Landscape Masterplan.

6. Delivery

Figure 3: Sustainable drainage solutions creating aesthetically pleasing habitats
Opportunities exist to ensure bats are protected during construction works by including tool box talks for workers and incorporating bat boxes in the design of new buildings and large refurbishments.

The Plan promotes measures that will encourage invertebrates, birds and bats across campus. There are opportunities to support other wildlife such as amphibians (as seen in Michael Smith Quad) and hedgehogs, a species that has seen dramatic decline in recent years. Managing and enhancing the University’s network of greenspace will help provide corridors and stepping stones for nature to flourish, allowing species to both exist in and move across the landscape on campus and beyond.

Invertebrates
- Support invertebrate diversity and numbers across campus.
As detailed in ‘key spaces’, by increasing the diversity of planting, providing nectar and pollen-rich species and reducing pesticide and herbicide use, will support invertebrates. Invertebrates of particular focus include bees, moths and butterflies. The University currently has a number of bee hives managed by trained staff. Bee hives can be found on top of the Rutherford Building, at The Whitworth and at Jodrell Bank.

Birds
- Help to preserve existing bird species and undertake measures to raise numbers across campus.
The Plan promotes measures that will enhance the habitat provision for a wider range of birds that do live/could live on campus. Attention will focus on the following six species, the first four of which are UK Biodiversity Priority Species and the final two of which are on the amber list of Birds of Conservation Concern:
1. Starling (Sturnus vulgaris)
2. Song thrush (Turdus philomelos)
3. House sparrow (Passer domesticus)
4. Bullfinch (Pyrrhula pyrrhula)
5. Black redstart (Phoenicurus ochruros)
6. Swift (Apus apus)

Bats
- Help to support Manchester’s bat populations.
All species of bat and their roosts are legally protected. Bats are nocturnal and feed on insects, therefore need landscapes which support large numbers of invertebrates, such as species-rich grasses, hedgerows, trees and waterbodies. Bat surveys have been carried out on campus, which have recorded evidence of bats. Figure 4 illustrates recordings of where bats have been found, blue dots are where bats have been detected or casualties have been recovered and yellow crosses are roost locations.

Key species, targets and baselines

Work has already been undertaken to establish the number of pollinator species on a certain section of main campus. Further work is planned to establish baseline figures and targets for the whole campus using the same methodology.

Key species, actions and programmes to be developed:
• The University of Manchester living campus gardens: Identification and design of areas across campus for ornamental planting that has visual impact and benefits wildlife.
• The University of Manchester Tree Plan and trail: Implementation of The University of Manchester’s Tree Plan and design and delivery of the University of Manchester’s tree trail, which includes for an interactive map and opportunities for sharing information/experiences.
• Provision and enhancement of habitat spaces (natural and man-made) programme: Development of action plans for identified bird species and pollinators that link into existing planting and landscaping schemes with enhancement measures.

Figure 4: Recordings of Bat Species in a 2km Radius from The University of Manchester

Opportunities exist to ensure bats are protected during construction works by including tool box talks for workers and incorporating bat boxes in the design of new buildings and large refurbishments.

Figure 4: Recordings of Bat Species in a 2km Radius from The University of Manchester

Habitat and species survey and engagement programme: Development of surveys to support data collection, understanding of impact and opportunity to engage staff, students and local communities, as well as relevant external bodies/organisations.

Progression of Campus Masterplan green spaces: Continued support for greenspace associated with capital programme new builds and large scale refurbishments, and delivery of the University’s Landscape Masterplan.
The Plan promotes measures that will encourage the use of open space to improve the health and wellbeing of staff, students and the local community whilst also providing opportunities for research, teaching and learning. The Plan aims to support and further people’s connection to, and understanding of, the natural world.

**Active travel**
- Increase the number of staff and students participating in active travel.
- Support UMBUG, UMRun and Lunchtime Strollers in promoting the University as a welcoming place for cycling, run-commuting and walking.

As shown in the 2015 Staff Survey, 11% of University staff walk to work, 10% cycle and 1% run. Results from a 2015 student survey highlighted that 30% of students walk and 7% cycle to University. The provision of infrastructure, a safe and clean environment and networks of engaged people can help to encourage active travel and improve the health and wellbeing of staff and students. Whilst this Plan’s sole travel focus is active travel, the Sustainable Resources Plan includes additional targets, actions and programmes around the wider sustainable travel agenda.

**Engagement**
- Support opportunities for staff and students to engage with the natural environment.

One of the most common requests the Environmental Sustainability Team receives, from both staff and students, is for a more active way to be involved in biodiversity and greenspace projects. We will establish a network of living campus champions to harness this interest and enhance and promote biodiversity at the University, and promote engagement and volunteering opportunities already offered by Manchester Museum, The Whitworth and the Directorate of Student Experience.

**Living labs**
- Support a range of natural environment living labs projects across campus.

The campus will be used as a learning and research platform, with research and results feeding back into University strategy and operations. For example, if within the new greenroof policy there was scope for the roofs to contain/replicate areas where different substrates could be reliably tested, that would provide the University with data in which development decisions could subsequently be made. Recently, students have collected data on a development site pre-construction and this data will be used to evidence the impact of landscaping on local biodiversity. This project, and more like it, is part of the living labs initiative.

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15 [www.umapit.org](http://www.umapit.org)
16 [http://universitylivinglab.org](http://universitylivinglab.org)
6. Delivery

Teaching and learning
- Use the campus as a place for fieldwork.

A number of different schools have teaching related to biodiversity. Currently some use is made of the campus through teaching, for example biodiversity surveys in the Michael Smith quad. However, there is the potential to make more use of our campus to educate our students. This could provide valuable data which could be utilised in estate management going forward and could help track the success of living campus initiatives. The Living Campus Group has representatives from faculties and PSS, and can therefore be the conduit for this work to go through.

Design and construction
- Ensure that where possible all new builds and large scale refurbishments incorporate biodiversity, active travel, the health and wellbeing of occupants and climate change resilience into the design and construction process.

The University estate includes 245 buildings of varying age profile in 667 acres/270 hectares across 886,000m²; 58% academic research related and 42% teaching related. There are 24 listed buildings, including John Rylands Library Deansgate and the Lovell telescope. Buildings include a museum, art gallery, studio theatre and concert hall, state of the art facilities and nationally important research facilities. The University undertakes annual long term maintenance (LTM), planned preventative maintenance and small works projects to maintain and upgrade the estate, alongside the Campus Masterplan (2012-2022) to further develop the estate.

The Campus Masterplan presents the University with a unique opportunity to embed sustainability within the estate and increase positive impacts on the environment. We also recognise that the Masterplan presents challenges and as such negative impacts will be managed/mitigated.

In relation to this Plan, each project is required to set targets relating to biodiversity, climate change resilience and active travel (as part of the environmental sustainability tracker process). These targets (see Table 6 for examples) are tailored to the specific project type (whether the project is a new build or a refurbishment) and progress is monitored throughout design, construction and post occupancy.

Supporting the local community
- Investigate opportunities to link initiatives that support a healthy environment and local communities. Opportunity exists to work alongside surrounding local communities (Figure 5) by providing interconnected, accessible greenspace across campus through to the localities and sharing ideas and expertise. The Office for Social Responsibility is working with the Faculty of Humanities looking at the University as an Anchor Institution and staff and students are supporting the Ardwick green spaces project (established 2016). Opportunities for living campus projects will result from this work.

To find out more about sustainability in the Campus Masterplan please see the Sustainable Resources Plan and the Sustainable Build Standard. An overview of the University procedures to embed sustainability in to design, construction and operation are illustrated in Appendix 2.

Figure 5: The University of Manchester in the local community

Figure 6: example of Campus Masterplan biodiversity and active travel targets

<table>
<thead>
<tr>
<th>Topic</th>
<th>Aim</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active travel</td>
<td>Providing sufficient and user friendly active travel facilities</td>
<td>• Cycle storage. • Shower provision. • Locker provision. • Drying room provision.</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Enhance site ecology</td>
<td>Provision of landscaping that will enhance local biodiversity, local species and pollen-rich species.</td>
</tr>
<tr>
<td>Greenroofs and green walls</td>
<td>Use of greenroofs to reduce surface water runoff and enhance biodiversity</td>
<td>• Greenroof area. • Green wall area.</td>
</tr>
<tr>
<td>Tree</td>
<td>To protect and mitigate against tree loss</td>
<td>• Number of trees retained. • 2:1 replacement.</td>
</tr>
<tr>
<td>Open space</td>
<td>To create a suitable microclimate for the public realm</td>
<td>Design to consider wind, light and climatic conditions.</td>
</tr>
<tr>
<td>Climate change impact and resilience</td>
<td>To improve climate resilience and adaptation capacity</td>
<td>Design team to examine impacts of extreme events including heatwaves and flooding.</td>
</tr>
<tr>
<td>Sustainable urban drainage</td>
<td>To reduce storm water run-off and minimise negative environmental impacts</td>
<td>• Drainage calculations for pre and post development. • Minimise impervious area.</td>
</tr>
</tbody>
</table>

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17 https://ukces.blog.gov.uk/2015/03/19/ukces-explains-what-is-an-anchor-institution

18 This may not be possible in all projects, for example a simple small scale refurbishment will not be able to contribute due to scope of work, costs and brief.
### Key activities, targets and baselines

<table>
<thead>
<tr>
<th>Topic area</th>
<th>Baseline Year</th>
<th>Baseline Data</th>
<th>2022 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff active travel</td>
<td>2014/15</td>
<td>22%</td>
<td>25%</td>
</tr>
<tr>
<td>Student active travel</td>
<td>2014/15</td>
<td>37%</td>
<td>39%</td>
</tr>
<tr>
<td>Living campus champions</td>
<td>2014/15</td>
<td>N/A</td>
<td>26% (10% of registered sustainability champions)</td>
</tr>
<tr>
<td>Biodiversity-related community projects</td>
<td>2014/15</td>
<td>N/A</td>
<td>At least one project completed with the local community</td>
</tr>
<tr>
<td>Staff wellbeing*</td>
<td>2015/16</td>
<td>50%</td>
<td>58 (value, see * below)</td>
</tr>
<tr>
<td>Student wellbeing*</td>
<td>2015/16</td>
<td>55%</td>
<td>60 (value, see * below)</td>
</tr>
<tr>
<td>Value of wellbeing</td>
<td>2015/16</td>
<td>£67.8m</td>
<td>£73m</td>
</tr>
</tbody>
</table>

Wellbeing: Value derived from wellbeing valuation methods developed by academics at the University of Manchester. Methodology uses a multi-item scale instrument to measure wellbeing outcomes for staff and student populations on campus environments in a quantitative manner. There are no current examples of best practice scores to compare The University of Manchester. However, previous research, applying the instrument in the built environment, suggests that very high quality, user-centred building design can reach wellbeing scores of 63 for the building users.

### Key activities, actions and programmes to be developed:

- **Active travel programme:** To continue to support cycling, running and walking initiatives and infrastructure.
- **Ethical Grand Challenges (students):** To continue to provide opportunities to support the Sustainability Challenge, through learning, engagement and volunteering.
- **10,000 Actions (staff):** To continue to provide opportunities to support targeted actions through learning, engagement and volunteering.
- **Living campus champions:** To establish a network of living campus champions and provide opportunities for them to work on living campus projects, specifically living campus gardens.
- **Green Impact and Green Impact Project Plus:** To continue to provide opportunities to support Green Impact and to promote living campus initiatives as possible Project Plus projects.
- **Living campus research projects:** To support a process that links living labs and the living campus, including for the means to disseminate research findings.
- **Ardwick green spaces project:** To work with Manchester City Council and local residents supporting their green spaces project.
- **Progression of Campus Masterplan green spaces:** Continued support for greenspace associated with capital programme new builds and large scale refurbishments, and delivery of the University’s Landscape Masterplan.
7. Communication and engagement

"It is crucial to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help. Civil society organisations play a frontline role, directly engaging and enthusing the public about biodiversity."

Biodiversity 2020

8. Governance and reporting

The Environmental Sustainability Team and Living Campus Group have developed the Living Campus Plan. This Living Campus group is chaired by Professor Amanda Bamford, Professor of Plant Science and is deputised by Dr. Emma Gardner, Head of Environmental Sustainability. Its membership includes representatives from the University’s professional support services, faculties, cultural institutions and student body.

The Plan will also provide opportunity to build on strategic alliances with stakeholders, including Manchester City Council, Manchester Climate Change Agency, Environment Agency, City of Trees and local residence groups. These partnerships will be taken forward alongside the Academic Leads for Sustainability and the Academic Engagement Group.

Reports will be presented to ESLG as and when appropriate. In addition, The University of Manchester Annual Sustainability Report, which will be presented to the University’s Senior Leadership Team, and will be available for both internal and external audiences, will include a report on the Living Campus Plan.

Sub-groups as and when needed to deliver Plans/objectives/projects. Assumed sub-groups, waste, energy/carbon, travel, IT, labs, food
European and UK Legislation (as of April 2016) exist to protect the natural environment; legislation applicable to The University of Manchester is detailed below:

### Countryside Rights

**The Badgers Act 1991**

- Applies to the protection of wildlife and countryside, with protection given to birds, animals and plants throughout Great Britain.
- It is an offence to intentionally kill, injure or take any wild bird or take damage and destroy nests and eggs (with exception to species listed in Schedule 2). It is an offence to intentionally kill, injure or take wild animals listed in Schedule 5 or interfere with places of shelter. It is also an offence to pick, uproot or destroy listed wild plants, seeds and sponges.
- The Act also contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife.
- This Act has relevance to maintenance (including building maintenance and routine hedge and tree work), development, demolition and construction, with prosecution if evidence of nesting birds is found and work continues and if a bat roost or great crested newt is disturbed.
- The Act has undergone a range of amendments since its original enactment. 

**Forestry Act, 1967**

- Under the Forestry Act, a felling licence may be required to fell growing trees according to their location, volume and diameter, the type of tree work involved, other permission such as planning permission and other legal and statutory requirements such as in the circumstances of nuisance, danger or tree disease.
- If there are plans to fell any trees across campus a check should be made with the Forestry Commission to see if a licence is needed.

**The Wildlife and Countryside Act 1981 (as amended)**

- Provides comprehensive protection for badgers and their setts. Under this Act, it is illegal to kill or harm badgers or disturb their setts unless a license has been granted.
- Under the Forestry Act, a felling licence may be required to fell growing trees according to their location, volume and diameter, the type of tree work involved, other permission such as planning permission and other legal and statutory requirements such as in the circumstances of nuisance, danger or tree disease.
- Trees can be protected through a Tree Preservation Order (TPO). The TPO aims to protect single trees, including veteran trees, or groups of trees from deliberate damage or removal. It is an offence to damage, cut, top, fell, uproot or destroy a tree with a TPO on it. Permission is required from the relevant local councils, such as Manchester City Council (main campus and residences), Cheshire East (Lodgel Bank) and Copeland Borough Council (Dalton Cumbrian) before carrying out tree maintenance on them.

**The Town and Country Planning Act (Tree Preservation) (England) Regulations 2012**

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### The Environmental Damage (Prevention and Remediation) Regulations 2009

- Transpose the EU Environmental Liability Directive in England and Wales to prevent and repair damage to water systems, land quality, species and their habitats and protected sites. Regulations apply to a range of activities that cause a risk of ‘significant’ damage or cause ‘significant’ damage to land, water or biodiversity.

### The Conservation of Habitats and Species Regulations 2010

- Consolidate previous amendments that transpose the EC Habitats Directive into national law. The Regulations provide for the designation and protection of ‘European Sites’ and the protection of ‘European Protected Species’. Public bodies are required to have due regard to the EC habitats Directive under the regulations.

### Environmental Permitting (England and Wales) Regulations 2010 and Water Resources Act 1991

- Offence, without a relevant Permit, to cause or knowingly permit any poisonous, noxious or polluting matter or any solid waste matter to enter any controlled waters, to cause or knowingly permit any trade effluent or sewage effluent to be discharged from a building or from any fixed plant on to or into any land; or into any waters of a lake or pond which are not inland freshwaters. When undertaking activities such as construction, waste storage, landscaping and vehicle washing these Regulations need to be considered to ensure that land and water pollution is prevented.

### Hedgerow Regulations 1997

- Prohibit the removal of important hedgerows without having been granted with a hedgerow removal notice. They apply to hedgerows growing in, or adjacent to, any common land, protected land, or land used for agriculture, forestry or the breeding or keeping of horses, ponies or donkeys if the hedgerow has a continuous length of, or exceeding, 30 metres; or it has a continuous length of less than 20 metres and, at each end, meets (whether by intersection or junction) another hedgerow. The Regulations also set out criteria to determine ‘important hedgerows’ that require special consideration by local planning authorities.

### The Climate Change Act 2008

- The Climate Change Act put in place a policy framework to promote adaptation action in the UK consisting of:
  - The UK Climate Change Risk Assessment is a five-yearly assessment of the major risks and opportunities from climate change to the UK. The first assessment in 2012 found that, without action, the largest costs are likely to come from increased flood damage and disruption, pressure on some water resources, risks to health from hotter summers, and damage to ecosystems.
  - The National Adaptation Plan is the Government’s long term strategy to address the main risks and opportunities identified in the risk assessment.
  - The UK Adaptation Reporting Power grants the Secretary of State the power to require public service organisations to produce reports on what they are doing to adapt to climate change and protect ecosystems.
Appendix 2: 
Embedding sustainability into design, construction and operation

### Sustainability plan

- **Stage 1**: Preparation and brief
  - 3. Stage 1 sustainability plan

- **Stage 1**: Sign off
  - 3.1 Stage 1 sustainability plan update

- **Stage 2**: Concept
  - 3.2 Stage 2 sustainability plan update

- **Stage 2**: Sign off
  - 3.3 Stage 3 sustainability plan update

- **Stage 3**: Design development
  - 3.4 Stage 4 sustainability plan update

- **Stage 3**: Sign off
  - 3.5 Stage 5 and 6 sustainability plan update

- **Stage 4**: Technical design (tender docs)
  - 3.6 Stage 4 report – sustainability section

- **Stage 4**: Sign off

- **Stage 5 and 6**: Construction handover, in use
  - 3.7 Stage 5 and 6 sustainability plan update

- **Stage 5 and 6**: Sign off

- **Stage 7**: Post-occupancy evaluation
  - 3.8 Post-occupancy evaluation review

### Stage report – sustainability section

- 6. Stage 2 report – sustainability section

### Target setting/workshops

- 6.1 Stage 3 report – sustainability section

### Inputs into other documents

- 6.2 Stage 4 report – sustainability section

### Update

- 6.3 Stage 5 and 6 sustainability plan update

### Biodiversity surveys, assessments, design considerations and mitigation measures

- 1. Site constraints and opportunities brief

### Building occupant engagement and surveys to consider health and wellbeing

- 2. Input into design brief

- 3.5 Stage 5 and 6 sustainability plan update

### ENGAGEMENT WITH LANDSCAPING TEAM

- 1. Site constraints and opportunities brief

- 3.5 Stage 5 and 6 sustainability plan update

- 4. Bespoke ES tracker

- 5. ES kick-off workshop

- 6. Stage 2 report – sustainability section

- 7. Input into planning submissions

- 8. Stage 3 workshop(s) – as required

- 9. Addendum to campus travel plan

- 10. Input in to tender requirements

- 11. Assess contractor alternative proposals

- 12. Review contractor environmental management plan

- 13. Building user presentation

- 14. Post-occupancy evaluation review

- 16. Regular update reports