sow the city

Greater Manchester Integrated Care Partnership

GM NHS Green Spaces and Biodiversity Toolkit

Version 2.1 July 2025

Contents

Foreword

The increasing recognition of the **interconnectedness between human health and the natural environment** underscores the critical role that green spaces can play within healthcare settings.

Developed in partnership with Sow the City, the toolkit provides practical guidance on a range of strategies, including habitat creation, sustainable drainage systems, and community engagement. By integrating these elements into healthcare environments, we can foster biodiversity, mitigate the impacts of climate change, and enhance the overall quality of life for patients, staff, and the wider community.

By implementing the strategies outlined in this toolkit, healthcare providers can contribute to a **healthier, more resilient, and sustainable future.**

Sir Richard Leese OBE

Purpose of the Toolkit

This toolkit provides an innovative 'how to' guide for individuals who are involved in starting or developing **natural environment projects within healthcare settings**. It will also be valuable for organisations that provide grounds maintenance or landscaping services across these spaces, and for those whose role it is to promote access to green spaces or nature-based activities to healthcare service users.

At a strategic level, Integrated Care Systems and healthcare providers should find essential information to assist them in planning, delivering, or expanding nature schemes to meet the needs of staff, patients, and local communities.

The toolkit provides an integrated approach guiding the i**dentification and prioritisation of green space improvement measures**, across all healthcare settings including primary care settings, acute, specialist, and mental health hospitals, urgent care centres, rehabilitation centres, specialised outpatient services, and step-down and long-term care facilities, with an appreciation of the varying size, locale, and context of each space.

This toolkit should be used in conjunction with the associated framework, in *Appendix 1*, which summarises the suggested interventions and provides 'costs per units', suggestions of funding streams, a score of the environmental and social benefits of the green space intervention as well as a brief methodology to monitor and evaluate the effectiveness of the green space.

Green space improvement measures can **support the delivery of green plans** by considering different types of spaces, measures, costs, and benefits of green spaces in healthcare settings. The benefits of green social prescribing initiatives and guidance on connecting patients, staff, and visitors with nature, e.g., through community kitchen gardens, and nature walks are also outlined.

Policy Context

The benefits of green spaces, particularly in healthcare settings have been widely promoted in national policy. For example:

The Environment Act 2021 requires public authorities who operate in England to consider what they can do to conserve and enhance biodiversity. This is the strengthened 'biodiversity duty' that the Environment Act 2021 introduced.

On 1 July 2022, **the NHS became the first health system to embed net zero into legislation**, through the Health and Care Act 2022. Through this act, NHS England, all trusts, foundation trusts, and integrated care boards are responsible for contributing towards statutory emissions and environmental targets. Trusts and integrated care boards are required to deliver localised Green Plans. as outlined in the delivering a Net Zero National Health Service report, which is now statutory guidance.

The Environmental Improvement Plan was launched in January 2023 as an update to the Government's 25-Year Environment Plan. It reaffirms the Government's commitment to **connecting people with nature as a way of improving their mental and physical health.** It makes a new commitment to work across Government so that people can access green space or water within

a 15-minute walk of where they live and commits to driving the roll-out of social prescribing, as well as to exploring options for how best to embed green social prescribing, including across multiple healthcare pathways.

In 2022, Greater Manchester Combined Authority **declared a biodiversity emergency to protect, maintain and enhance the natural environment.**

Greater Manchester is now developing a Local Nature Recovery Strategy (LNRS) – a new system of spatial strategies for nature and environmental improvement mandated by the Environment Act 2021. The Strategy sets out a collaborative vision and targets for nature recovery.

As of 12 February 2024, developers must deliver a Biodiversity Net Gain of 10%, meaning that the development will result in 10% more or better-quality natural habitat than before the development took place.

Useful links

Applying net zero and social value in the procurement of NHS goods and services

Manchester Green and Blue Infrastructure Strategy, Implementation Plan Refresh

Greater Manchester Combined Authority (GMCA) Five-Year Environment Plan

The Importance of Nature in Healthcare Settings

A **thriving natural environment** is vital to support the nation's health and wellbeing. A growing body of evidence demonstrates that exposure to green spaces such as parks, allotments, community gardens, and woodlands as well as blue spaces, such as lakes, rivers, and ponds, has positive impacts on physical and mental health.

Exposure to natural environments has been associated with **more favourable heart rates, vitamin D levels, cardiovascular health, reduced rates of type 2 diabetes, pain reduction, and lower blood pressure.** Furthermore, research shows that hospital patients recover faster from surgery and need less pain medication when viewing nature than patients who view brick walls.

The natural environment is also associated with **lower levels of stress, anxiety, and depression.** Benefits occur from passive exposure (viewing nature) and active exposure (actively engaging with the natural environment).

> Researchers have found that 20-to-90-minute sessions in nature are most beneficial for mental health

Researchers have found that 20-to-90-minute sessions in nature are most beneficial for mental health, with **gardening, nature-based therapy, and exercise in green spaces being the most effective for adults.** Gardens and other green spaces also play an important role in supporting patient, staff, and visitor wellbeing.

Useful links

Ulrich, Roger. (2002) Health Benefits of Gardens in Hospitals

Health Foundation (2024) Relationship between access to green space and health

Thompson R. (2018) Gardening for health: a regular dose of gardening

Mitchell RJ, et al. (2015). Neighbourhood Environments and Socioeconomic Inequalities in Mental Wellbeing

Furthermore, green spaces and gardening can improve the health and wellbeing of individuals with a range of social needs. These benefits can be used as a 'green social prescription' for people with long-term conditions for example, **food-growing gardens can be created for social and therapeutic purposes**, and the produce can be used in patient meals.

> Alongside these health and wellbeing benefits, green spaces reduce flooding, tackle climate change, improve air quality, and provide natural shading in extreme weather.

Figure 1. Grassland at Crumpsall Vale Intermediate Care Unit at North Manchester General.

People living in areas with greater access to green space tend to have higher life expectancies. Some individuals, such as those on low incomes and/or from ethnic minority groups, are more likely to face barriers to accessing nature and therefore are less likely to receive these benefits.

Creating accessible and inclusive green spaces in healthcare settings and promoting access to green spaces in the community can help reduce these barriers. Research shows that the impact of green spaces on mental and physical health delivers greater positive outcomes for disadvantaged groups, **helping to reduce health disparities.**

The positive physical and mental health outcomes related to green spaces directly align with NHS priorities. Increased access to nature within healthcare settings and managing conditions in the community for example by treating conditions through green social prescribing, is **beneficial for patients, staff, and the overall NHS** by reducing patient referrals and ultimately reducing pressure on services.

Implementation

Implementation: Nature and Biodiversity

Green spaces of any size are beneficial for wildlife, through the provision of shelter, food, and water. The plants and vegetation that make up these green spaces are important habitats for pollinators, such as bees, butterflies, and hoverflies. It is beneficial to maintain a healthy population of pollinators, as many flowers and crops relay on them for reproduction. In healthcare settings smaller green spaces such as gardens, verges, trees, and pollinator friendly planting can act as 'wildlife corridors' or 'green stepping stones' allowing mammals, birds, and insects to travel between green spaces, increasing biodiversity.

The opportunities within healthcare sites are numerous – from quick wins for nature to providing the foundations for future urban greening:

Habitat Connectivity

✓ New green spaces in healthcare settings should be strategically positioned, based on the ideas of 'connectivity'.

✓ 'Connectivity' refers to the linking of neighbouring habitats and smaller fragmented environments to facilitate wildlife movement across the landscape. For example, a tree line that links a pond with a wooded area will encourage birds to move between nesting sites and a water source.

Wildflower Meadows

Most public-access grassed areas are classed as 'amenity grassland', from expansive lawned areas to pockets of mown grass along verges and central reservations. They tend to lack in the diversity of grasses and flowering plants and are often kept short. Amenity grass offers very poor habitat for most British wildlife: little food resources, no nesting opportunities or shelter from the elements, and no protection from predators. In many ways, heavily managed lawns offer little more to wildlife than a tarmacked area. The following techniques will have a huge benefit to biodiversity within healthcare settings:

✓ Implement the 'No Mow May' initiative across as much of the site as possible, as the name suggests, do not cut grass in May, but rather let the grasslands 'go to meadow', creating diverse habitats for plants and animals.

✓ This does not need to be every single pocket of grass on site but try to have some continuation to allow for the animals that need the longer grass for cover, or continuous flowering plants, to move around. Taller, diverse grasses and wildflowers are preferred by amphibians, reptiles, and invertebrates. They also attract a diverse range of insects, boosting pollination and providing increased prey for bats and birds.

✓ This practice can be taken further, by refraining from cutting until late June or even August when many grasses and flowers will have finished seeding.

✓ Vary grass heights, for example, leave some areas long, whilst cutting a 1 m border along path/road edges, to help create a purposeful impression, rather than looking unkempt. Add mown paths through long grass to make the area more accessible' It is beneficial to leave taller grasses under hedges and trees for wildlife, as this grassy space provides ideal environments for nesting, feeding, egg-laying, and overwintering habitat for birds, insects, and small mammals.

Case Study: ‘No Mow May’ at Trafford General Hospital, Trafford

In 2024 Manchester Foundation Trust left a 200m x 25m area of grass to grow at Trafford General Hospital. The ‘No Mow May’ initiative has been taken further here, as the area won’t be cut until August to allow for the grasses and flowers across the site to finish seeding, providing additional food for birds and other species. The estates' staff at Trafford General have also mown a 1m border around the wildflower meadow, which makes the meadow look purposeful rather than un-kept. There was also positive feedback from staff members.

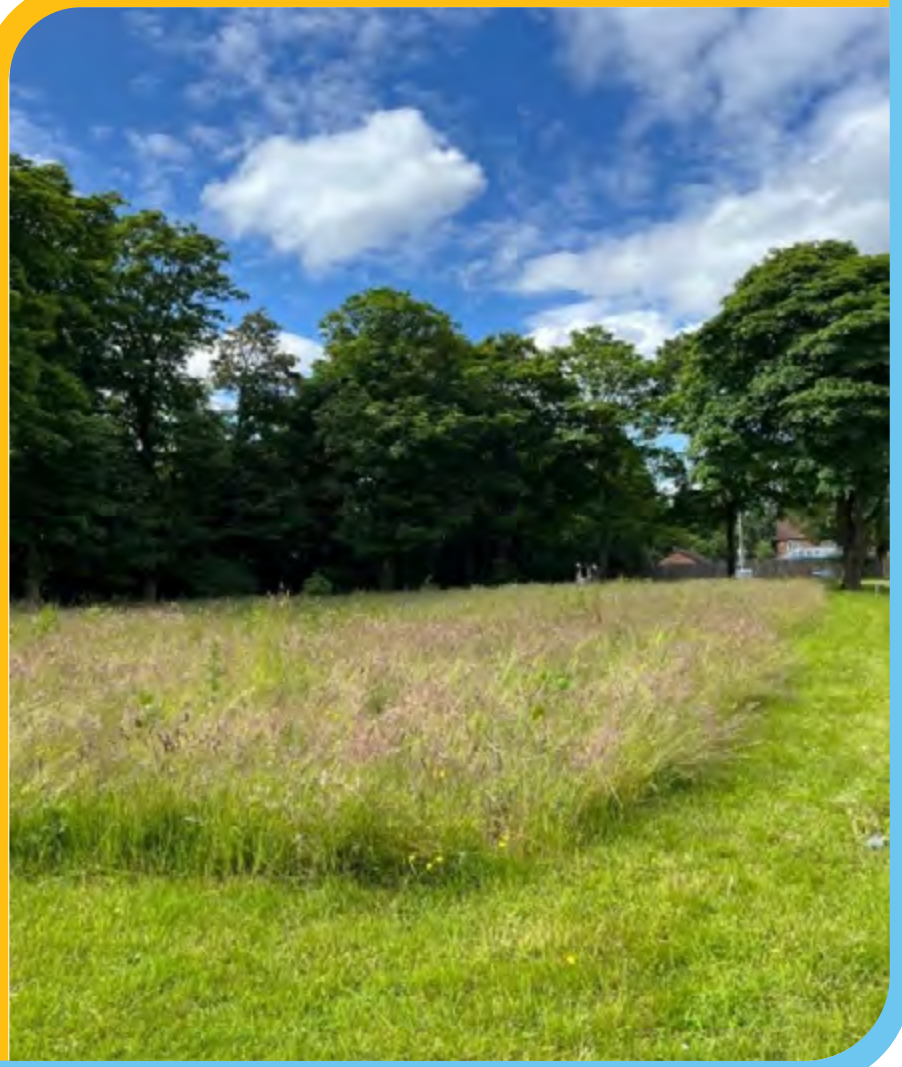

Figure 2. 'No Mow May' initiative at Trafford General Hospital

Trees

Trees provide nesting, roosting, shelter, and food resources for a wide range of birds, bats, mammals, and invertebrates.

Planting

✓ Prioritise native species of known wildlife value, such as Birch, Rowan, Willow, English Oak, and fruit/nut trees.

✓ Some ornamental species also make good feature trees for visitors and can supply good food resources for insects.

✓ Avoid single species stands as this limits biodiversity.

✓ Add trees to any expanses of featureless amenity grass. Plant in groups or lines to create a wildlife 'corridor' that links up other existing wildlife features/green space.

✓ Add additional native perennial planting at the base of some trees.

Maintenance

✓ Try to retain mature and veteran trees as they support more insects than younger trees.

✓ Where there are health concerns in older trees, consider monitoring rather than felling.

✓ Reduce pruning regimes, so the trees retain >75% of the expected canopy for their age range and height. Allow canopies to over-sail any vegetation underneath.

✓ With grouped trees and treelines, aim for a continuous canopy with limited gaps.

Hedges

Species-rich native hedging can have one of the largest impacts on wildlife on a site, providing a continuous habitat to connect other fragmented green spaces, as well as foraging features for bats, nesting sites and food for birds, nectar sources for insects, and shelter for a variety of animals.

Planting

✓ To provide year-round foliage and food, use a variety of native species including hawthorn, hazel, elder, field maple, honeysuckle, guelder rose, dogwood, and spindle.

✓ Planting can incorporate existing mature trees within the hedge.

✓ Buffer roads with roadside hedges.

✓ Link up fragmented green spaces.

✓ Use hedgerows as boundaries instead of fencing, to provide a continuous green habitat around a site.

Maintenance

New cutting regimes can be implemented to:

✓ Allow for a height and width of at least 1.5m where possible

✓ Avoid pruning during bird-breeding season (March-August)

✓ Reduce the cutting of ground flora at the base of hedgerows.

Habitat Creation

Management practices typically remove opportunities for birds, bats, small mammals and insects to nest – we traditionally prune away dead wood and remove diseased trees that would provide holes for bats to roost, fill holes in mortar where a bird might nest, rake up dead leaves which insects rely on, tidy away fallen brash where hedgehogs could shelter. However, there are many cheap and easy ways to provide these habitats in urban sites.

✓ Bird Boxes provide spaces for birds to roost and nest. They should be secured 2-4m up mature trees or walls facing Northeast to provide natural protection from wind and sunlight. A range of different box designs (e.g. Swift Boxes) is recommended to attract a variety of bird species.

✓ Bat Boxes provide artificial roosts designed to encourage bats into areas where there are few roosting sites. They should be secured 4-6m up mature trees or walls, facing between the Southwest and Southeast, with a clear flight line.

✓ Multi-story insect 'hotels' can be built with natural materials (e.g., untreated wood, bamboo, pinecones, reeds), providing habitats for many invertebrate species. Place in warm and sheltered locations across the site. Insect hotels and nesting materials will need to be refreshed periodically.

✓ Deadwood and leaf litter should be left where safe to do so, as this also provides an important habitat for many species.

✓ Refuge piles are low-cost, simple ways to provide habitats for a wide range of wildlife, especially invertebrates, amphibians, reptiles, and hedgehogs by providing a refuge for breeding and hibernating. They can be created in numerous ways by stacking natural materials found on site, such as logs, rotting wood, and rocks. They should be around 2m long and 0.5m high, and be positioned within shady wooded areas, scrubby margins, and nearby any ponds/rain gardens before being covered with topsoil to protect from disturbance. They should then remain untouched.

Green Roofs and Walls

✓ Green roofs and walls have many environmental benefits: support biodiversity, absorb rainwater, reduce surface water run-off, absorb heat from the sun, reduce the urban heat island effect, and help filter the air by absorbing C02 and producing oxygen.

✓ Within built environments covered by impervious buildings, carparks and hardstanding, green roofs, and walls provide stepping-stones across otherwise grey and dangerous landscapes.

Two types of green walls

Climbing plants can be planted in the soil at ground level. Honeysuckle and Ivy are recommended as they support a range of species and are a vital food source for insects and birds, they also provide high levels of nectar, which is key for pollination. Both plants grow relatively quickly and can grow directly against the building fabric or be trained to grow up simple trellis structures/wires. Choose some south-facing aspects and some more shaded locations.

Modular systems can be installed, using a skeletal structure that is suspended, with sections containing plants and flowers that collectively make the green wall. These systems can have hidden irrigation systems. As modular systems have more infrastructure, they are more costly than the climbing plants option.

Types of green roof systems

Extensive
Generally, consist of shallow depth, low nutrient substrate, designed to support plants with lower maintenance requirement, e.g..sedums, grasses, mosses and some wildflower species.

Biodiverse
Used to recreate or enhance the biodiversity lost when building erected. Undulating substrate depths used across the roof deck to promote diversity of plant species. Aggregates of different sizes, boulders and braches/logs may also be included in the design to offer a variety of habitats.

Semi intensive*
An intermediate green roof type that can include characteristics of both extensive and intensive roofs.

Intensive
Roof gardens are designed to be accessed for leisure. They use greater substrate depths to accommodate larger plants such as trees and shrubs. This type of system often creates a larger weight loading on the roof and requires a higher level of maintenance, including regular irrigation.

**Irrigation and maintenance requirements are dependant upon the plant species installed.*

Invasive Species

In the UK there are 36 types of invasive species.

✓ These species have been identified as of special concern because they cause damage to native plant species and the wider environment.

✓ To reduce damage, consider mapping where invasive species are, developing a management plan, and ensuring they are controlled by qualified contractors.

Artificial Lighting

✓ Urban lighting has a significant wildlife impact, particularly on nocturnal species, such as bats, insects, and some birds.

✓ Current lighting should be reviewed and reduced where possible, keeping in mind staff and patient safety.

✓ Use the lowest level lighting possible and avoid bare bulbs and any uplighting of trees and vegetation, this can be achieved with shielding and baffles.

✓ Choose warm-coloured LEDs as they are less disruptive than cooler, white, and blue-tinged lights.

✓ Artificial lighting should not directly illuminate hedgerows and tree lines.

Prioritise native species of known wildlife value, such as

Birch, Rowan, Willow, English Oak, and fruit/nut trees, hawthorn, hazel, elder, field maple, honeysuckle, guelder rose, dogwood, and spindle.

Case Study: Cornbrook Medical Practice Woodland Wellbeing Garden, Hulme

Cornbrook GP surgery in Hulme, Manchester transformed an unused woodland behind the practice into an inclusive wellbeing garden for patients and staff. The garden was created in partnership with local Manchester-based environmental organisation, Sow the City, and funded by Ambition for Ageing.

The development of the garden worked with the 'grain of nature' by introducing native woodland species that have flourished there such as **wild garlic, sweet woodruff, wild strawberries, primroses, and spring bulbs** such as snowdrops, crocuses, and tulips. This garden also has a relatively small pond which is a wildlife haven home to an array of invertebrates which are often the basis of the wider food chain/ ecosystems.

Cornbrook GP surgery has around **13,000 patients** on their books, many of whom are socially isolated and have very little access to outdoor space. This garden has been beneficial to the community, providing opportunities for local people to connect with nature, learn new skills, participate in physical exercise, meet new people, and access healthy, locally produced, and free food. The GPs at the practice sometimes even use the garden for consultations.

Figure3. Cornbrook GP Wellbeing Garden

Useful links

Invasive non-native (alien) plant species: rules in England and Wales (2020)

Ecological connectivity as a planning tool for the conservation of wildlife in cities (2023)

Woodland Trust (2024) How to Plant Trees

Implementation: Building Capacity and Capability Across the Workforce

> The successful development of green spaces and implementation of green social prescribing in healthcare settings requires input from a variety of roles.

The workforce to support green spaces includes Grounds and Estates Management Teams, Clinical Staff, and Social Prescribing Link Workers. However, there is still sometimes a lack of awareness about how to move this agenda forward.

✓ Green space advocates, at all levels of the project, and across various departments are useful to promote the implementation of green spaces and green social prescribing.

✓ Green spaces and activities provide opportunities for connecting with a range of organisation-wide agendas including patient experience, staff wellbeing, communications, and estate management.

✓ Training estates and grounds maintenance staff is useful to ensure that green space and biodiversity suggestions are integrated within 'business-as-usual' maintenance practices.

✓ For hospital sites consider recruiting a ranger (see link below) with horticultural experience to engage staff and develop green space projects.

✓ Train clinical staff in how to run nature-based activities for patients e.g., Social and Therapeutic Horticulture. The experience and work of Occupational Therapists is often well-matched with the use of nature-based activities.

✓ Finding a balance between quick wins and larger initiatives is important. For example, projects such as 'No-Mow May' and encouraging access to existing green spaces can be cost-neutral and easier to implement than more complex initiatives such as green walls.

Case Study: NHS Nature Recovery Ranger, Royal Liverpool University Hospital, Liverpool

In 2021, with funding from the Government's Green Recovery Challenge Fund, three NHS rangers were placed at Hospitals in Bristol, Liverpool, and London.

The rangers were tasked with working with NHS partners at healthcare sites to improve the quality of green spaces and help integrate nature into patient care, staff wellbeing, and community engagement. These rangers aim to maximise the role that green spaces play in the prevention of health issues, support recovery, and create healthier environments.

For example, the Nature Recovery Ranger in Liverpool, working for Liverpool University Hospitals Foundation Trust (LUHFT) has written a biodiversity action plan, to guide future management of LUHFT green estate.

Here the ranger has helped with projects to improve biodiversity in hospital grounds, such as planting 15,500 spring bulbs which provide a vital food source for bumble bees emerging from hibernation. They have also helped encourage and facilitate access to green spaces by reprofiling steep paths, to reduce gradients to Bluebell Woods and designed and installed a new map at the entrance of the woods to show patients and community members the woodland's walkways.

Useful links

Field Studies Council, Phase 1 Habitat Survey and Biodiversity Net Gain training courses

Field Studies Council Biodiversity Courses

Hospital Rangers (2021) Hospital rangers

Biglife Habitat Management Guidance

Manchester City Council Tree Management Principles

Figure 4. Map showing access and key features of Bluebell

Implementation: Improving Access

People from lower socio-economic backgrounds and/or from minority ethnic groups are less likely to have gardens and have quality green spaces close to where they live.

There are inequalities in access to nature.

In England, Black people are nearly four times as likely as White people to have no access to outdoor space at home, even comparing people of similar age, social grade, and living situation, those of Black ethnicity are 2.4 times less likely than those of White ethnicity to have a private garden. Older people and those with long-term illnesses are also less likely to visit green spaces. It is beneficial to improve access to green spaces within healthcare settings as these spaces are publicly accessible, and the benefits of these green spaces will be more greatly felt by those who face barriers accessing nature, in turn helping to reduce health disparities.

✓ Enhance and encourage the experience of nature within healthcare settings. This experience can be either direct through contact with environmental features or passive through viewing nature, natural materials, colours, and shapes that evoke and mimic nature.

✓ Making green spaces more accessible and usable for example, allowing access to restricted green areas such as courtyards.

✓ Investment in infrastructure such as benches, good quality paths, raised beds, maps, and signage, that help make green spaces more user-friendly should be made.

✓ Encourage patients to access green spaces, e.g., through existing patient information systems.

✓ Provide spaces for consultations with patients in outdoor areas.

✓ Provide activities and events in outdoor areas.

Case Study: Green Health Walk, Prestwich Site, Bury

In 2019 Sow the City approached Greater Manchester Mental Health NHS Foundation Trust to build the Green Health Walk at the Prestwich site.

The walk is a marked route for hospital staff, visitors, and patients to enjoy the grounds, and promote the physical and mental benefits of greenspace and exercise. Sow the City carried out an open room consultation with service users and staff to develop ideas and align the project with the needs of hospital users. An ecological survey of the site was also conducted, which found a variety of bat species on site.

In March 2020, the construction of the walk was completed by Sow the City staff and volunteers from the hospital. The Green Health Walk is a 20-minute stroll through the grounds with seven new 'stations' to visit: a heritage orchard, allotment, herb bed, natural sculpture, bird and bat habitat boxes, and native woodland. As well as providing points of interest, the stations offer additional benefits including produce for the hospital café, new habitat for wildlife, and mitigate climate change and surface water flooding.

Useful links

Improving access to green space (2020) Public Health England

Natural England (2020) People and Nature Survey for England

Thrive (2024) Accessible Garden Design

NHS Greater Manchester Mental Health (2020) Prestwich Green Health Walk

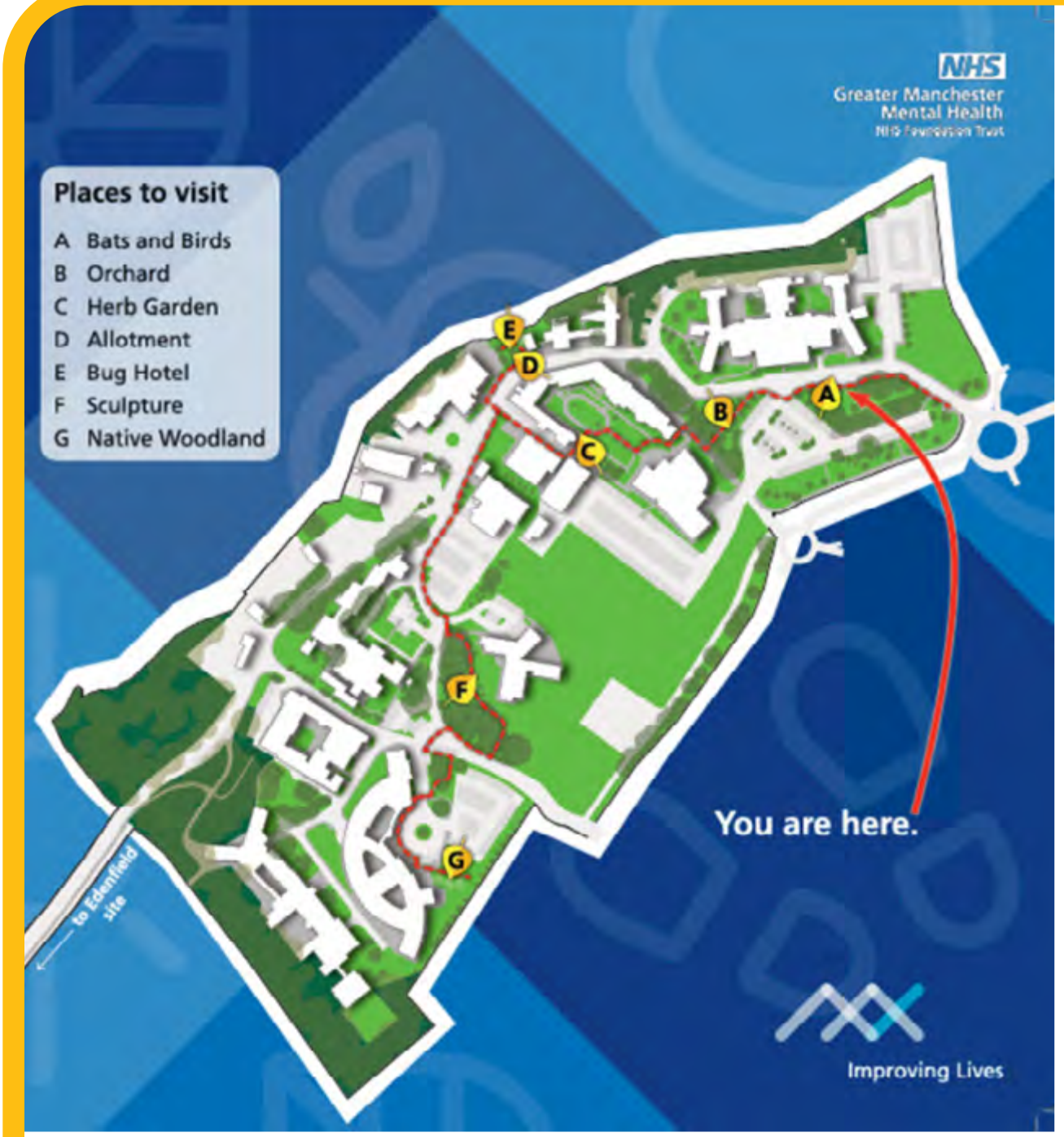

Figure 5. Map of the Green Health Walk at Prestwich Site

Implementation: Physical and mental health

There is a lot of evidence that spending time in the natural environment is good for our mental health: reducing stress, fatigue, anxiety, and depression as well as faster recovery from mental health issues. There is also a positive relationship between **time spent in nature and positive physical health,** boosting our immune systems, encouraging physical activity, and reducing heart disease risks and chronic diseases. Therefore, a thriving natural environment plays a vital role in supporting the nation's health and wellbeing. These positive health outcomes can be fostered across different healthcare settings.

✓ **'Biophilic design'** should be considered and incorporated when developing healthcare infrastructure. Biophilic design refers to man-made environments that encourage human connections with nature. This connection can be through direct contact with nature or passively by viewing nature or natural materials, colours, and shapes that mimic nature. Within healthcare settings, this could include painting healthcare rooms with natural, calming colours or strategically building a green wall where it can be viewed by patients.

✓ Green spaces provide alternative spaces for staff, visitors/ families, and patients (where possible) to gather, socialise, converse, and relax. While in these green spaces, these individuals will be able to benefit from the wellbeing impacts associated with nature, which is beneficial considering the highly stressful environment in healthcare settings.

✓ **Therapeutic and sensory gardens** can be built to provide wellbeing benefits for different conditions. For example, sensory gardens can be designed for individuals with dementia as colour, touch, and scent have been shown to calm, ground, and inspire the recollection of distant memories and sensations.

✓ The benefits associated with nature, can be offered to individuals on prescription, through '**Green Social Prescribing'**, which involves connecting people to nature-based activities and interventions to improve their health, wellbeing, and resilience. Link Workers connect people to community groups and agencies for practical and emotional support, based on a 'what matters to you' conversation. **Evidence shows that there are benefits of nature-based social prescriptions on long-term health and wellbeing and in populations at the greatest risk of health inequalities.**

Spending time in the natural environment is **good for our mental health**: reducing stress, fatigue, anxiety, and depression as well as faster recovery from mental health issues.

Case study: Nature for Health Programme, Greater Manchester

From 2021-2023 Greater Manchester was one of seven National 'test and learn' sites delivering NHS England's Green Social Prescribing Programme, through the Nature for Health network.

The **Nature for Health** network is a collection of individuals and organisations within Greater Manchester who are interested in promoting the social and health benefits associated with connecting with nature. The network explored how practitioners could support people with mental ill health, by offering connection to the natural environment through referral to nature-based activities, groups, and organisations, (known as green social prescribing).

Delivery partners included Sow the City, Petrus, Salford CVS (Community and Voluntary Service), and Lancashire Wildlife Trust, who were all supported by City of Trees, RHS, and Groundwork Greater Manchester.

Evaluation of the programme found that 9 in 10 (87%) clinicians involved in the programme believe that green social prescribing has value as part of a holistic approach to patient care, and 80% of clinicians involved agreed that spending time in nature offers unique benefits to patients.

NHS Greater Manchester (NHS GM) received continuation funding for the programme in 2024-25 to provide targeted outreach and delivery for minority ethnic communities and people with severe mental health needs, a GM-wide Learning Network, and a detailed economic analysis of the costs and benefits of Green Social Prescribing. Manchester Mind, START Salford, and Northern Roots joined the programme as delivery partners.

Useful links

National Academy for Social Prescribing Green Social Prescribing toolkit. NASP (2023)

NHS Forest. Therapeutic Gardens (2024)

Figure 6. Fresh Produce at Ryder Brow Allotments as part of the Nature for Health Scheme

Implementation: Blue Infrastructure and Sustainable Drainage

> Blue infrastructure refers to urban water infrastructure: **ponds, lakes, streams, and rivers.**

Blue infrastructure features where viable and safe are valuable for biodiversity, combating climate change as well as improving the health and wellbeing of individuals. Combining green and blue infrastructure in the form of Sustainable Urban Drainage Systems (SuDS) encourages the infiltration of rainwater, reducing the pressure on the main system. Blue infrastructure and SuDs are key for supporting biodiversity, especially in urban areas where water sources are scarce, they can be an oasis for wildlife, providing refuge for a range of birds, amphibians, and invertebrates.

✓ Consider the location of new blue infrastructure within the local ecosystem; **ponds should be strategically positioned**, for example, near foliage and low bushes which provide habitats for wildlife to encourage their movement through the environment.

✓ Accessibility of water features such as ponds should be considered and promoted, try to construct blue infrastructure so that it **can be viewed from hospital beds,** waiting rooms, dayrooms, etc, so patients can watch wildlife visiting the pond.

✓ In public areas, blue infrastructure can be covered with mesh or metal covers or surrounded by a 1.1m high fence, to maximise safety or ponds.

Ponds

✓ Ponds should have a **shallow, slopping side or a ramp** to allow easy access for wildlife.

✓ It is ideal to locate a pond partly in the shade: **shade suits many pond plants and animals** whereas the sun will help it warm up quickly in spring, making it attractive to spawning frogs and toads.

✓ **Larger ponds will attract more wildlife**, but smaller ponds are still significant, providing a habitat and water source for small creatures. When constructing a pond aim for a depth of 20-60cm (varying across the pond) as this will suit most pond plants and animals.

Rain Gardens/ Bog Gardens

✓ Rain Gardens are shallow depressions with absorbent soil, planted with vegetation that can withstand occasional temporary flooding, they **'slow the flow of rainwater'** by absorbing and infiltrating street runoff, relieving the stress of water on the main system.

✓ A rain or bog garden can be created by excavating an area to around 30 cm depth and laying a pond liner with drainage slits. Then add a layer of grit/gravel before re-filling the area with the excavated soil – the aim is for damp but not water-logged ground.

✓ Plant to achieve a range of flowers throughout the year: water forget-me-not, marsh marigold, ragged robin, water avens, marsh woundwort, hemp agrimony.

✓ Many native perennials will do well in rain gardens, including wildflowers, grasses, ferns, and even some shrubs and small trees.

Swales

✓ Swales are shallow channels that collect and move water downstream, they are often covered with grass/ vegetation and have shallow side slopes and a flat bottom.

✓ They should be positioned near building downpipes and/or expanses of paved or tarmacked surfaces.

Useful links

Susdrain, Sustainable Drainage (2024)

JNCC, Blue Green Infrastructure (2024)

RHS, Wildlife Ponds, (2024)

Plant to achieve a range of flowers throughout the year:

Water forget-me-not, marsh marigold, ragged robin, water avens, marsh woundwort, hemp agrimony, wildflowers, grasses, ferns, and shrubs.

Implementation: Food Growing

Healthcare settings have the potential to grow significant quantities of food. 'Grow your own' initiatives can promote health and wellbeing, through improving access to healthy and affordable food. Food production is responsible for a quarter of the world's greenhouse gas emissions, hence creating more sustainable food systems through local food production can make a considerable difference.

✓ Identify parcels of land that are suitable for growing food, this either could be more traditional growing spaces, such as gardens, allotments, and verges or **unconventional growing spaces such as rooftops, green walls, or window ledges** also have potential to provide us with an abundance of free and nutritious food.

✓ Soil quality can be improved with compost and organic matter, or **raised beds can be built and filled for growing.**

✓ Soil tests also can be conducted to make sure that the ground is appropriate for growing fruit and vegetables.

> 'Grow your own' initiatives can promote health and wellbeing, through improving access to healthy and affordable food.

✓ Fruit trees and bushes can also be planted in place or alongside existing ornamental planting or planted withi existing amenity grassland. **Fruit trees and bushes require much less maintenance** than annual or perennial crops, so are ideal in areas where there is less maintenance capacity or gardening groups.

✓ When selecting what to grow, **consider the local community and their diets**, as well as what food is needed on site.

✓ Food growing projects are a highly effective way to **engage patients, staff, and families** and an opportunity to link to cooking and healthy eating initiatives.

✓ To help build capacity for starting and maintaining food growing projects within healthcare settings it is possible to **partner with local environmental and horticultural organisations.** These local organisations can share horticultural expertise and knowledge and may even be able to link the food-growing project with the wider community to help establish the project's longer-term sustainability.

Case study: Recovery Pathways Gardening for Wellbeing Service, Wythenshawe, Manchester

The Green Wellbeing service at Studio 1 in Wythenshawe is part of Recovery Pathways, a GMMH creative wellbeing service.

It is based at St Andrew's Church along with other community activities. The service accepts adults who are referred from mental health services and aims to build confidence and skills, enable personal recovery from mental distress, and support access to moving on. A supported peer-led group also runs here, including people who have moved on from the service to volunteer doing garden maintenance and food growing activities.

The St Andrews church garden is easily accessible by public transport and attracts referrals from people living in South Manchester. The site provides weekly activities run by GMMH NHS Trust's dedicated Green Wellbeing tutor. They have a lot of raised beds that the service users use to grow fruit and vegetables, such as strawberries, rhubarb, runner beans, and a range of herbs. This fresh food is then incorporated into cooking sessions at the site, providing healthy, local, and free food to those who need it.

Figure 7. Strawberries growing at Studio 1, Wythenshawe

Useful links

Sustain, Growing Health (2024)

NHS Forest, Food Growing in Hospitals (2024)

Social farms and gardens, Growing well together (2024)

Implementation: Sustainable Grounds Maintenance

Sustainable grounds maintenance means adapting your maintenance processes and scheduling to **help promote biodiversity.** The general principles are to manage green spaces less often and at specific times. Also, to avoid chemical treatments, and to leave decaying matter in place to provide habitat for wildlife.

✓ Low management regimes save on management costs and are an easy win for biodiversity (e.g. 'No Mow May'). There are many ways to implement changes that will **balance the benefits to wildlife with the health and safety of visitors and your site's overall aesthetic in mind.**

✓ **Only use pesticides, when necessary,** rather than on a strict frequency basis — and then only use very targeted methods. They can help with maintenance, but they also kill invertebrates, get into waterways, and can have adverse impacts on human health. The adverse effects often outweigh the benefits of their use.

✓ Consider using ground cover plants or mulch to reduce weeds and weeding by hand where this is on a small scale and feasible.

✓ Select shrubs and trees that can **withstand changes to the climate** for many years, potentially lengthening their lifespan.

✓ Chemical treatments should be avoided as they can kill invertabrates such as pollinating insects.

✓ **Reduce water consumption** through the implementation of drought tolerant planting and more efficient watering techniques (e.g.., irrigation systems), and use of methods such as mulching (e.g.., from on-site tree surgery).

✓ Leave grass clipping on the ground after mowing and/ or setup onsite composting sites. Done carefully **this can save time, money and reduce air pollution** compared with offsite disposal.

Useful links

The Wildlife Trusts, Wild Gardening (2024)

RHS, Trees for Climate Change (2024)

Implementation: Monitoring and Evaluation

Green spaces have many environmental benefits: increasing biodiversity, filtering air pollutants, reducing the urban heat island they also play a crucial role in improving physical health and wellbeing. It is important to monitor and evaluate these benefits to make sure that they are optimal. For example, if these benefits are lower than expected, this data can then show where problem areas lie, and hence where adjustments are needed to maximise these physical and wellbeing benefits. On the other hand, if outcomes from data show better results than expected than this **green space intervention can be used as a 'best-practise' and should be replicated in other areas across healthcare settings.** There are many different tools and methodologies available for measuring the physical benefits of green spaces.

✓ It is useful to start with a baseline assessment of the existing green spaces, for example, a Phase 1 habitat survey and/ or tree survey which will help identify the type and quality of existing green spaces.

✓ Biodiversity Net Gain (BNG) can be used. This is a quantifiable approach that aims to leave the environment in a measurably better state after a development, it seeks to improve outcomes for biodiversity by creating or enhancing habitats on a site. BNG uses a calculation tool to **score improvements to habitats according to their relative value for biodiversity**, to demonstrate the impacts of different habitat designs. The calculation tool provides a numerical 'BNG value' before and after a development to ensure that a project increases the overall biodiversity of a site.

✓ Air temperature sensors can be mounted on relatively taller structures (e.g., lampposts). It is ideal to measure air temperature every hour over a 24-hour period to account for variations in temperatures from day to night. This data should also be collected at set points throughout the year (e.g. each month) to account for seasonal changes in air temperature.

✓ Air quality sensors can be installed to monitor the concentrations of air pollutants (Nitrogen Oxides, Sulphur, Oxone, and Particulate Matter) in the air around the healthcare settings.

It is important to monitor and evaluate these benefits to make sure that they are optimal.

✓ To **measure the impact of green spaces on mental health** a wide range of tools can be used ranging from case studies and simple questionnaires to clinically approved tools such as Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS).

✓ The engagement of people who don't speak English as their first language or those with specific requirements needs to be considered. WEMWBS, for example, is **available in more than 25 languages.** And sometimes less complex or less intrusive mental health measures are more appropriate than those that require someone to talk directly about their mental health.

✓ The MOHAWk (Method for Observing Physical Activity and Wellbeing) can also be used, this is an observational tool for assessing three levels of physical activity (sedentary, walking, and vigorous) and two evidence-based wellbeing behaviours:

Connect – Social interactions

Take Notice – Taking notice of the environment.

✓ Ideally, this data should be collected at different times of day and seasonally, throughout the year, to provide the most accurate data.

✓ For the most accurate results, if possible, it can be effective to obtain data sets before and after the green space intervention, so that the two data sets can be compared to see the extent of the impact of the green intervention.

✓ **Consider engaging with an ecologist,** specialist evaluation partner, or a university for more complex measurement and evaluation. In some cases, universities may be able to provide free evaluation support through an existing undergraduate, PhD, or research programme.

Useful links

The Warwick-Edinburgh Mental Wellbeing Scales WEMBWBS (2024)

Office for National Statistics, Personal wellbeing user guidance (2021)

JNCC, Handbook for Phase 1 habitat Survey (2010)

Benton (2019) Method for Observing pHysical Activity and Wellbeing (MOHAWk)

Implementation: Funding

Securing funding and resources for green spaces and nature recovery projects can be challenging. The unpredictability of funding and therefore delivery is a significant barrier to implementing, developing and maintaining this type of project.

Hence, it is ideal to reach out to an array of funding streams.

✓ There is an increasing emphasis by grant funders on nature recovery and climate change e.g. The National Lottery Fund (see below). In addition, many NHS Trusts have associated charities. Some NHS suppliers have designated corporate social responsibility budgets.

✓ Some Voluntary, community and social enterprise (VCSE) sector partners have mixed business models, which combine grant funding, some public sector commissioned work, and commercial income generation, to deliver nature recovery services. This approach enables these organisations to layer up resources and amplify their impact. For example, **it can be useful to develop innovative funding models to implement improvements and initiatives** using a combination of existing capital programmes, grant funding, NHS charity funding, and in-kind volunteering support.

✓ Ensure nature recovery is integrated as part of the implementation of capital programmes.

✓ There is an opportunity for statutory partners to 'commission' nature recovery projects such as Green Social Prescribing activities.

✓ Corporate volunteering programmes can be implemented and delivered across healthcare sites. Groups of corporate volunteers could be tasked with **creating new therapeutic gardens and planting trees.** Volunteer days can be arranged and managed by environmental organisations with specialist expertise and experience in this sector. Corporates are sometimes able to provide payment for well-run and organised volunteer days.

✓ Since January 2024, BNG has been incorporated into the Environment Act, this legislation means that Local Planning Authorities will require developers are required to deliver a 10% "Biodiversity Net Gain". Biodiversity net gain can be achieved both onsite and offsite depending on a case-by-case basis.

Case study: Corporate Volunteering, Crumpsall Vale Intermediate Care Unit, North Manchester General Hospital, Manchester

In partnership with Manchester Local Care Organisation and Manchester University Foundation Trust', Sow the City runs regular corporate volunteering days at their hospitals.

With growing levels of interest from corporate companies to reach Corporate Social Responsibility (CSR) and Environment Social Governance (ESG) goals, there is a large capacity and demand from corporate groups to find meaningful outdoor environmental volunteering opportunities. Groups of corporate volunteers are tasked with creating new therapeutic gardens, planting trees and hedges, and habitat creation.

Figure 8. Hayes and Jarvis Corporate Volunteers at Crumpsall Vale Intermediate Care Unit at North Manchester General

Useful links

Potential funding for community green spaces (2021)

Get Grants, Funding Finder (2024)

NHS Forest (2024)

Appendix 1: Framework

Interventions covered in this framework:

1. Reduced grass cutting (e.g. 'No Mow May')
2. Wildflower meadow
3. Tree planting
4. Bird boxes
5. Bat boxes
6. Insect hotels
7. Leaving deadwood and leaf litter
8. Green wall (with modular systems)
9. Green wall (with climbing plants)
10. Extensive green roof (inaccessible)
11. Intensive green roof (accessible)
12. Allowing access to restricted areas
13. Benches
14. Accessible paths (e.g to access green space)
15. Signs
16. Green health walk
17. Therapeutic/sensory garden
18. Green social prescribing
19. Wildlife ponds
20. Rain gardens (SuDs)
21. Swales
22. Food growing area (e.g. allotment)
23. Fruit trees
24. Fruit bushes

**Specific terms used for interventions are defined in the Key terms and Methods section.*

Intervention 1: Reduced grass cutting (e.g. 'No Mow May')

Cost per unit: No cost

Quantified cost: No cost

Categorised cost: No cost

Resources/funding source: None required

Policy: Environment Act (2021)

Benefits:

- Increased levels of biodiversity – high benefit
- Reduced Urban Heat Island Effect – low benefit
- Reduced rainwater runoff – medium benefit
- Reduced air pollution – low benefit
- Improved physical health – medium benefit
- Improved mental health – medium benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: Use quadrat (1) along a transect (2). Record species abundance (3), species richness (4), and height of each species. Use sweep net transects (5) to identify insects.

Notes: 'No Mow May' initiative can be taken further to August, to allow the grasses and flowers to finish seeding. A 1-meter border can be mown around the wildflower meadowto make it look more purposeful.

Intervention 2: Wildflower meadow

Cost per unit: £5/m^2

Quantified cost: >£10k

Categorised cost: Medium cost

Resources/funding source: Organisation to fund

Policy: Environment Act (2021)

Benefits:

- Increased levels of biodiversity – high benefit
- Reduced Urban Heat Island Effect – low benefit
- Reduced rainwater runoff – medium benefit
- Reduced air pollution – low benefit
- Improved physical health – medium benefit
- Improved mental health – medium benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: Use quadrats along a transect. Record species abundance, species richness, and height of each species. Use sweep net transects to identify insects.

Notes: Option for annual or perennial wildflower meadows. Exact costs will depend on size of area to be planted and soil preparation needed.

Intervention 3: Tree planting

Cost per unit: £50 (half standard M25)

Quantified cost: >£100 per tree

Categorised cost: Low cost

Resources/funding source: NHS Forest, City of Trees, Woodland Trust tree packs.

Policy: Environment Act (2021), Health Care Act (2022)

Benefits:

- Increased levels of biodiversity – high benefit
- Reduced Urban Heat Island Effect – high benefit
- Reduced rainwater runoff – medium benefit
- Reduced air pollution – high benefit
- Improved physical health – low benefit
- Improved mental health – medium benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: Monitor canopy cover(6). Include regular tree assessments(7) to check for signs of stress, disease, or damage that could affect tree growth.

Notes: Choose native trees e.g. birch (Betula spp.), rowan (Sorbus aucuparia), willow (Salix spp.), oak (Quercus spp.) and fruit and nut trees, i.e. crab apple (Malus sylvestris), hazel (Corylus avellana).

Intervention 4: Bird boxes

Cost per unit: £30/unit

Quantified cost: >£100 per box

Categorised cost: Low cost Resources/funding source: Organisation to fund

Policy: Environment Act (2021)

Benefits:

- Increased levels of biodiversity – low benefit
- Reduced Urban Heat Island Effect – negligible benefit
- Reduced rainwater runoff – negligible benefit
- Reduced air pollution – negligible benefit
- Improved physical health – negligible benefit
- Improved mental health – low benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: Observe the quantity and species of birds entering the bird box over a set time period(8).

Notes: Secure 2-4m up mature trees or walls, facing Northeast. Choose the box based on the species that you would like to encourage.

Intervention 5: Bat boxes

Cost per unit: £50/unit

Quantified cost: >£100 per box

Categorised cost: Low cost

Resources/funding source: Organisation to fund

Policy: Environment Act (2021)

Benefits:

- Increased levels of biodiversity – low benefit
- Reduced Urban Heat Island Effect – negligiblebenefit
- Reduced rainwater runoff – negligible benefit
- Reduced air pollution – negligible benefit
- Improved physical health – negligible benefit
- Improved mental health – low benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: Observe the quantity and species of bats entering the bat box over a set time period (9).

Notes: Secure 4-6m up mature trees or walls, facing between the Southwest and Southeast. Schwegler 1FD bat boxes.

Intervention 6: Insect hotels

Cost per unit: £300/unit

Quantified cost: >£500 per hotel

Categorised cost: Low cost

Resources/funding source: Volunteers can help create/ install

Policy: Environment Act (2021)

Benefits:

- Increased levels of biodiversity – low benefit
- Reduced Urban Heat Island Effect – negligiblebenefit
- Reduced rainwater runoff – negligible benefit
- Reduced air pollution – negligible benefit
- Improved physical health – negligible benefit
- Improved mental health – low benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: Dismantle insect hotel to identify and record the abundance of insect within (3).

Notes: Build with natural materials to provide shelter and nesting opportunities for invertebrates. Provide drilled holes for solitary bees between 2-10mm in diameter and 150mm deep. South or south east aspect.

Intervention 7: Leaving deadwood and leaf litter

Cost per unit: No cost

Quantified cost: No cost

Categorised cost: No cost

Resources/funding source: None required

Policy: Environment Act (2021)

Benefits:

- Increased levels of biodiversity – low benefit
- Reduced Urban Heat Island Effect – negligiblebenefit
- Reduced rainwater runoff – negligible benefit
- Reduced air pollution – negligible benefit•Improved physical health – negligible benefit
- Improved mental health – low benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: Lift up deadwood and leaf litter, then use sweep net transects to identify insects.

Notes: Provides a habitat for invertebrates and amphibians. Also collected by hedgehogs as nesting material for hibernation.

Intervention 8: Green wall (with modular systems)

Cost per unit: £300/m^2

Quantified cost: >£20k

Categorised cost: High cost

Resources/funding source: NHS Charities Together or Local NHS Trust Charities

Policy: Environment Act (2021), Health Care Act (2022).

Benefits:

- Increased levels of biodiversity – mediumbenefit
- Reduced Urban Heat Island Effect – highbenefit
- Reduced rainwater runoff – high benefit
- Reduced air pollution – high benefit
- Improved physical health – negligible benefit
- Improved mental health – low benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: Air temperature(10) and air quality sensors(11).

Notes: Modular systems use a suspended skeletal structure with irrigation systems.

Intervention 9: Green wall (with climbing plants)

Cost per unit: £80/m^2

Quantified cost: >£10K

Categorised cost: Medium cost

Resources/funding source: NHS Charities Together or Local NHS Trust Charities

Policy: Environment Act (2021), Health Care Act (2022).

Benefits:

- Increased levels of biodiversity – medium benefit
- Reduced Urban Heat Island Effect – high benefit
- Reduced rainwater runoff – high benefit
- Reduced air pollution – high benefit
- Improved physical health – negligible benefit
- Improved mental health – low benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: Air temperature(10) and air quality sensors(11).

Notes: Common honeysuckle (Lonicera periclymenum) and common or Atlantic ivy (Hedera helix and Hedera hibernica) are recommended as they support a range of species.

Intervention 10: Extensive green roof (inaccessible)

Cost per unit: £80/m^2

Quantified cost: >£20k

Categorised cost: High cost

Resources/funding source: NHS Charities Together or Local NHS Trust Charities

Policy: Environment Act (2021), Health Care Act (2022).

Benefits:

- Increased levels of biodiversity – medium benefit
- Reduced Urban Heat Island Effect – high benefit
- Reduced rainwater runoff – high benefit
- Reduced air pollution – high benefit
- Improved physical health – low benefit
- Improved mental health – low benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: Air temperature(10) and air quality sensors(11).

Notes: Thin substrate, vegetated by self-sustaining, low-lying plants e.g. mosses, succulents and grasses. Often these green roof systems are 4-6 inches deep, this system includes a drainage layer, growing medium and the vegetated substrate.

Intervention 11: Intensive green roof (accessible)

Cost per unit: £240/m^2

Quantified cost: >£20k

Categorised cost: High cost

Resources/funding source: NHS Charities Together or Local NHS Trust Charities

Policy: Environment Act (2021), Health Care Act (2022).

Benefits:

- Increased levels of biodiversity – medium benefit
- Reduced Urban Heat Island Effect – high benefit
- Reduced rainwater runoff – high benefit
- Reduced air pollution – high benefit
- Improved physical health – low benefit
- Improved mental health – low benefit
- Sustainable food – low benefit

Monitoring and evaluation: Air temperature(10) and air quality sensors(11).

Notes: Richer, deeper substrates, irrigated with drainage solutions to support a wider range of complex plant mixtures. Consult with a structural engineer if required.

Intervention 12: Allowing access to restricted areas

Cost per unit: No cost

Quantified cost: No cost

Categorised cost: No cost

Resources/funding source: None required

Policy: The Environmental Improvement Plan (2023)

Benefits:

- Increased levels of biodiversity – negligible benefit
- Reduced Urban Heat Island Effect – negligible benefit
- Reduced rainwater runoff – negligible benefit
- Reduced air pollution – negligible benefit
- Improved physical health – high benefit
- Improved mental health – high benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: MoHaWK survey(12)

Notes: Provide opportunity for staff, patients, visitors, community to use existing green spaces.

Intervention 13: Benches

Cost per unit: £400

Quantified cost: >£500

Categorised cost: Low cost

Resources/funding source: Local NHS Trust Charities

Policy: The Environmental Improvement Plan (2023)

Benefits:

- Increased levels of biodiversity – negligible benefit
- Reduced Urban Heat Island Effect – negligiblebenefit
- Reduced rainwater runoff – negligible benefit
- Reduced air pollution – negligible benefit
- Improved physical health – high benefit
- Improved mental health – high benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: MoHaWK survey(12)

Notes: Benches will encourage people to stay longer in nature go on walks as they have a place to rest.

Intervention 14: Accessible paths (e.g. to access green space)

Cost per unit: £100/m

Quantified cost: >£20k

Categorised cost: High cost

Resources/funding source: Local NHS Trust Charities

Policy: The Environmental Improvement Plan (2023)

Benefits:

- Increased levels of biodiversity – negligible benefit
- Reduced Urban Heat Island Effect – negligible benefit
- Reduced rainwater runoff – negligible benefit
- Reduced air pollution – negligible benefit
- Improved physical health – high benefit
- Improved mental health – high benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: MoHaWK survey(12)

Notes: Encourages individuals to explore nature, especially important for those who are use wheelchairs/walking sticks.

Intervention 15: Signage

Cost per unit: £200/sign

Quantified cost: >£500

Categorised cost: Medium cost

Resources/funding source: Local NHS Trust Charities

Policy: The Environmental Improvement Plan (2023)

Benefits:

- Increased levels of biodiversity – negligible benefit
- Reduced Urban Heat Island Effect – negligible benefit
- Reduced rainwater runoff – negligible benefit
- Reduced air pollution – negligible benefit
- Improved physical health – high benefit
- Improved mental health – high benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: MoHaWK survey(12)

Notes: Helps make green spaces more user-friendly, can encourage individuals to explore green spaces.

Intervention 16: Green health walk

Cost per unit: £50k for 500m walk including stations to visit and signage

Quantified cost: >£20k

Categorised cost: High cost

Resources/funding source: NHS Charities Together or Local NHS Trust Charities

Policy: The Environmental Improvement Plan (2023)

Benefits:

- Increased levels of biodiversity – medium benefit
- Reduced Urban Heat Island Effect – medium benefit
- Reduced rainwater runoff – medium benefit
- Reduced air pollution – medium benefit
- Improved physical health – high benefit
- Improved mental health – medium benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: MoHaWK survey(12)

Notes: Helps to promote the physical and mental wellbeing benefits of green spaces.

Intervention 17: Therapeutic/sensory garden

Cost per unit: £20k for small garden.

Quantified cost: >£20k

Categorised cost: High cost

Resources/funding source: NHS Charities Together or Local NHS Trust Charities

Policy: The Environmental Improvement Plan (2023)

Benefits:

- Increased levels of biodiversity – medium benefit
- Reduced Urban Heat Island Effect – medium benefit
- Reduced rainwater runoff – medium benefit
- Reduced air pollution – medium benefit
- Improved physical health – medium benefit
- Improved mental health – high benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: WEMWBS(13) and/or MoHaWK(12)

Notes: Can provide wellbeing benefits for different conditions alongside the multifunctional physical benefits of gardens.

Intervention 18: Green social prescribing

Cost per unit: £200/ session for up to 8 participants

Quantified cost: High cost

Categorised cost: Not applicable.

Resources/funding source: NHS Charities Together or Local NHS Trust Charities

Policy: The Environmental Improvement Plan (2023)

Benefits:

- Increased levels of biodiversity – low benefit
- Reduced Urban Heat Island Effect – low benefi
- Reduced rainwater runoff – low benefit
- Reduced air pollution – low benefit
- Improved physical health – medium benefit
- Improved mental health – high benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: WEMWBS(13) and/or MoHaWK(12)

Notes: Offer nature-based activities to individuals 'on prescription', to improve their health, wellbeing and resilience.

Intervention 19: Wildlife ponds

Cost per unit: £5k for small pond

Quantified cost: >£500

Categorised cost: Medium cost

Resources/funding source: NHS Charities Together. Volunteers can help create pond.

Policy: Environment Act (2021), Health and Care Act(2022)

Benefits:

- Increased levels of biodiversity – high benefit
- Reduced Urban Heat Island Effect – medium benefit
- Reduced rainwater runoff – high benefit
- Reduced air pollution – high benefit
- Improved physical health – medium benefit
- Improved mental health – medium benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: Record the abundance of aquatic life (invertebrates, amphibians)(14). Monitor the diversity and abundance of aquatic and marginal plants(15).

Notes: Strategically position ponds within the local ecosystem, with a slopping side to provide easy access for wildlife.

Intervention 20: Rain gardens (SuDs)

Cost per unit: £400/unit

Quantified cost: >£500

Categorised cost: Medium cost Resources/funding source: NHS Charities Together.

Policy: Environment Act (2021), Health and Care Act(2022)

Benefits:

- Increased levels of biodiversity – medium benefit
- Reduced Urban Heat Island Effect – medium benefit
- Reduced rainwater runoff – high benefit
- Reduced air pollution – low benefit
- Improved physical health – low benefit
- Improved mental health – low benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: Use rain gauges to monitor the volume of run off entering and leaving the rain garden(16).

Notes: Helps to slow the flow of water and encourages infiltration, decreases flood risk.

Intervention 21: Swales

Cost per unit: £40/m

Quantified cost: >£500 per 10m

Categorised cost: High cost

Resources/funding source: NHS Charities Together.

Policy: Environment Act (2021), Health and Care Act(2022)

Benefits:

- Increased levels of biodiversity – medium benefit
- Reduced Urban Heat Island Effect – medium benefit
- Reduced rainwater runoff – high benefit
- Reduced air pollution – low benefit
- Improved physical health – low benefit
- Improved mental health – low benefit
- Sustainable food – negligible benefit

Monitoring and evaluation: Use rain gauges to monitor the volume of run off entering and leaving the swale(16).

Notes: Shallow channels that collect and move rainwater downstream

Intervention 22: Food growing area (e.g. allotment)

Cost per unit: Not applicable

Categorised cost: Medium cost

Resources/funding source: NHS Charities Together or Local NHS Trust Charities. Volunteers can help plant and grow produce.

Policy: Environment Act (2021), Health and Care Act (2022)

Benefits:

- Increased levels of biodiversity – medium benefit
- Reduced Urban Heat Island Effect – medium benefit
- Reduced rainwater runoff – medium benefit
- Reduced air pollution – medium benefit
- Improved physical health – medium benefit
- Improved mental health – medium benefit
- Sustainable food – high benefit

Monitoring and evaluation: WEMWBS(13) and/or MoHaWK(12)

Notes: Traditional growing spaces e.g. allotments or unconventional e.g. rooftops or windowsills provide free, local, sustainable food.

Intervention 23: Fruit trees

Cost per unit: £100/ standard including stakes and guards

Quantified cost: >£100

Categorised cost: Low cost

Resources/funding source: NHS Forest or Local NHS Trust Charities Volunteers can help plant.

Policy: Environment Act (2021)

Benefits:

- Increased levels of biodiversity – medium benefit
- Reduced Urban Heat Island Effect – medium benefit
- Reduced rainwater runoff – medium benefit
- Reduced air pollution – medium benefit
- Improved physical health – medium benefit
- Improved mental health – medium benefit
- Sustainable food – high benefit

Monitoring and evaluation: Include tree assessment, check for signs of stress, disease, or damage that could affect the trees growth.

Notes: Fruit trees can be planted in place/alongside ornamental trees.

Intervention 24: Fruit bushes

Cost per unit: £10/bush

Quantified cost: >£100

Categorised cost: Low cost

Resources/funding source: NHS Forest or Local NHS Trust Charities Volunteers can help plant.

Policy: Environment Act (2021)

Benefits:

- Increased levels of biodiversity – medium benefit
- Reduced Urban Heat Island Effect – medium benefit
- Reduced rainwater runoff – low benefit
- Reduced air pollution – low benefit
- Improved physical health – medium benefit
- Improved mental health – medium benefit
- Sustainable food – high benefit

Monitoring and evaluation: MoHaWK survey(12)

Notes: Fruit bushes require less attention/maintenance than perennial fruit and vegetable plants.

Key Terms and Methods

1. Quadrat

Usually, a 1 m2 frame, which may contain wires to mark off smaller areas inside, such as 5 × 5 squares or 10 × 10 squares. Plants can be identified and counted. Quadrats may also be used for slow-moving animals, e.g. slugs and snails.

2. Transect Line

A line across a habitat or part of a habitat e.g. a string/rope placed on a measured line along the ground. The number of organisms of each species along a transect should be observed and recorded at regular, defined, intervals.

3. Species Abundance

Sum of individuals from a given species within a defined area. A species is considered abundant when it has a high population relative to the size of the area it inhabits.

4. Species Richness

The simplest measure of species diversity and is either a count of the number of or the list of species inhabiting a given area.

5. Sweep Net Transects

Use a sweep net to sweep through the grass/meadow of a defined line across a habitat or part of the habitat. All the insects collected should be counted and identified.

6. Canopy Cover

The proportion of ground area covered by the vertical project of tree crowns. The ruler tool on Google Maps, Satellite View, can be used to measure this cover from above. Canopy cover should be measured annually, and any change (growth or deterioration) should be recorded.

7. Tree Assessments

The process of inspecting and evaluating the structural condition of a tree and the harm that could occur if the tree fails. Here is a guiding document: *https://www.iros-uk.com/tree-health-and-vigour-assessment/*

8. Observing the Quantity and Species of Birds

Observe the quantity of birds in a given space over a defined time period. If needed use identification resources to help observe bird species, e.g.: *https://www.rspb.org.uk/birds-and-wildlife/a-z*

9. Observing the Quantity and Species of Bats

Observe the quantity of bats in a given space over a defined time period. Identification resources can help e.g. The Bat Conservation Trust's identification guide: https://www.bats.org.uk/about-bats/what-are-bats/uk-bats

10. Air temperature sensors

Mount on relatively taller structures (e.g., lampposts). It is ideal to measure air temperature every hour over 24 hours to account for variations in temperatures from day to night.

11. Air quality sensors

Should be installed to monitor the concentrations of air pollutants (Nitrogen Oxides, Sulphur, Oxone, and Particulate Matter) in the air around the healthcare settings.

12. MoHaWK survey

Method for Observing Physical Activity and Wellbeing) can also be used, this is an observational tool for assessing three levels of physical activity (sedentary, walking, and vigorous) and two evidence-based wellbeing behaviours: connect: social interactions and take Notice: taking notice of the environment. https://mohawk.fom.ac.uk/Default.aspx

13. WEMWBS

Warwick-Edinburgh Mental Wellbeing Scale. More information: https://warwick.ac.uk/fac/sci/med/research/platform/wemwbs

14. Identifying the Diversity and Abundance of Aquatic Life

Sweep net sampling can be used, by sweeping a net through aquatic vegetation or along the bottom of the water body, then emptying the contents into a sorting tray to be counted and identified. Identification guides can be used, such as https://www.warwickshirewildlifetrust.org.uk/sites/default/files/2021-11/Pond%20ID%20Chart.pdf

15. Identifying the Diversity and Abundance of Aquatic and Marginal Plants

Quadrats can be used identify and record all plant species within the defined area, the number of individual species should then be counted (the percentage cover can also be calculated) and identified to determine species abundance and diversity. Identification guides can be used, such as https://www.npms.org.uk/sites/default/files/PDF/NPMS%20ID%20GUIDE_WEB_0.pdf

16. Measuring the impact of rain gardens/swales

Install rain gauges before and after the rain garden/swale to monitor the volume of runoff entering and leaving the rain garden/swale. The two volumes can be compared to determine the effectiveness of the rain garden.


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