NHS
North Bristol
NHS Trust

Biodiversity Management Plan

2019




Contents

i. Introduction

North Bristol NHS Trust (NBT) is a centre of excellence for health care in the South West in a number of fields as well as one of the largest hospital trusts in the UK with an annual turnover of over £530 million. We have over 8,000 staff delivering healthcare across Southmead Hospital Bristol, Cossham Hospital, Bristol Centre for Enablement and within the local community of Bristol and South Gloucestershire. The Trust serves a population of 911,432 and in 2017-18 had 683,600 patient contacts (inpatients, outpatients, diagnostics etc.) The locations of our main sites can be found in Figure 1.

Figure 1: North Bristol NHS Trust sites in Bristol

This document provides a guide to the day-to-day management of NBT green space and our plans for the enhancement of biodiversity for wildlife, patient, staff, public and local community benefit. It also supports our application for a Green Flag Award for the Southmead site. NBT recognises the huge importance of the provision, protection and enhancement of our green spaces and includes it as a key commitment in our Sustainable Development Policy. It is also addressed within our Estates Strategy and associated Sustainability Design Brief. The Trust has worked with organisations such as Avon Wildlife Trust and Bug Life's Urban Buzz project to gain advice on how best to manage the site for the benefit of wildlife. We have commissioned ecological surveys to establish what habitats and species are present on our sites and to highlight key areas for protection and opportunities to make our green spaces more attractive to wildlife. We encourage our staff to use outdoor spaces and to engage in nature-related activities by including them as criteria in our staff award scheme.

The addition of trees, shrubs, flowers and grass not only improves the visual appearance of a locality but helps to distract the mind from the physical location and the associated anxiety this may bring for some people. Southmead Hospital is the biggest of all the Trust sites and has been considerably redeveloped in recent years, being home to the Brunel building completed in 2014. With the largest area of green space (see Figure 2), the greatest variety of green and blue spaces and the largest concentration of staff, patients and visitors, this Plan focuses predominantly on the Southmead Hospital site.

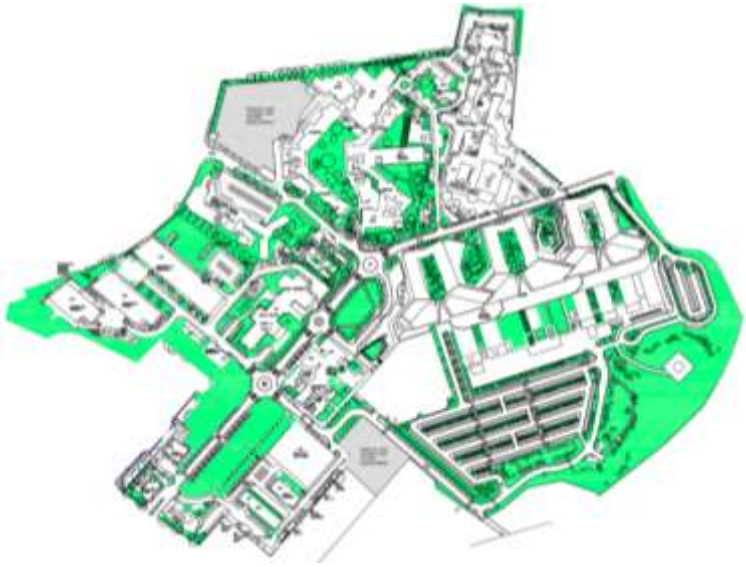

Figure 2: Green space map of Southmead Hospital site

ii. The importance of green spaces for human health

The 2018 government 25 year plan for the environment recognised that "connecting more people with the environment will promote greater well-being" and proposes to "help people improve their health and wellbeing by using green spaces."

The West of England Nature Partnership in their *Accessibility to Green Space in the West of England* report highlights how "natural spaces are a critical tool to help combat our mental health crisis, as connecting to nature helps relieve stress, anxiety and depression."[1]

Despite this however "the West of England falls behind the national average (17.9%) in its use of outdoor space for exercise or health reasons falling as low as 10.8% in Bristol."[2] Particularly given that areas of the Southmead ward fall into the 10%[3] most deprived wards in England, with only 65% of the local population getting enough weekly exercise[4] and only 63% of people being satisfied with the quality of parks and green spaces[5], there is potential for the Trust's green spaces to become a community resource.

The NHS Forest project summarises the importance of access to green space, particularly on hospital sites:

> *"Access to green space, particularly including trees, reduces cortisol (stress) levels, increases physical activity and speeds recovery if you have been ill."*[6]

They go on to say that the creation of greenspace provides "an easy way to encourage people inside healthcare organisations to look outside their windows and begin to connect to their immediate environment, leading on to understanding of, and engagement with, wider environmental issues, in particular climate change. Planting trees and making healthcare organisations greener, physically nicer places can save money. Not only are maintenance costs often reduced, but staff morale is improved, patients recover more quickly and are therefore using fewer resources. In the longer term, communities who have better access to greenspace stay physically and mentally healthier."[7]

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This was recognised as essential criteria for the redevelopment of the Southmead Hospital site and the new building was designed to enable this as can be seen from the scale of green spaces created as indicated in Figure 3.

[1] http://www.wenp.org.uk/wp-content/uploads/2018/12/Accessibility-to-open-green-space-in-the-West-of-England.pdf Accessed 25.6.19
[2] As above
[3] Health and Wellbeing in Bristol, Join Strategic Needs Assessment, 2018 Data Profile, chapter 5.1.
[4] Bristol City Council, Southmead Statistical Ward Profile 2019, May 2019 v3, Quality of life 1 chapter.
[5] Bristol City Council, Southmead Statistical Ward Profile 2019, May 2019 v3, Quality of life 2 chapter.
[6] https://nhsforest.org/benefits Accessed 25.6.19
[7] As above

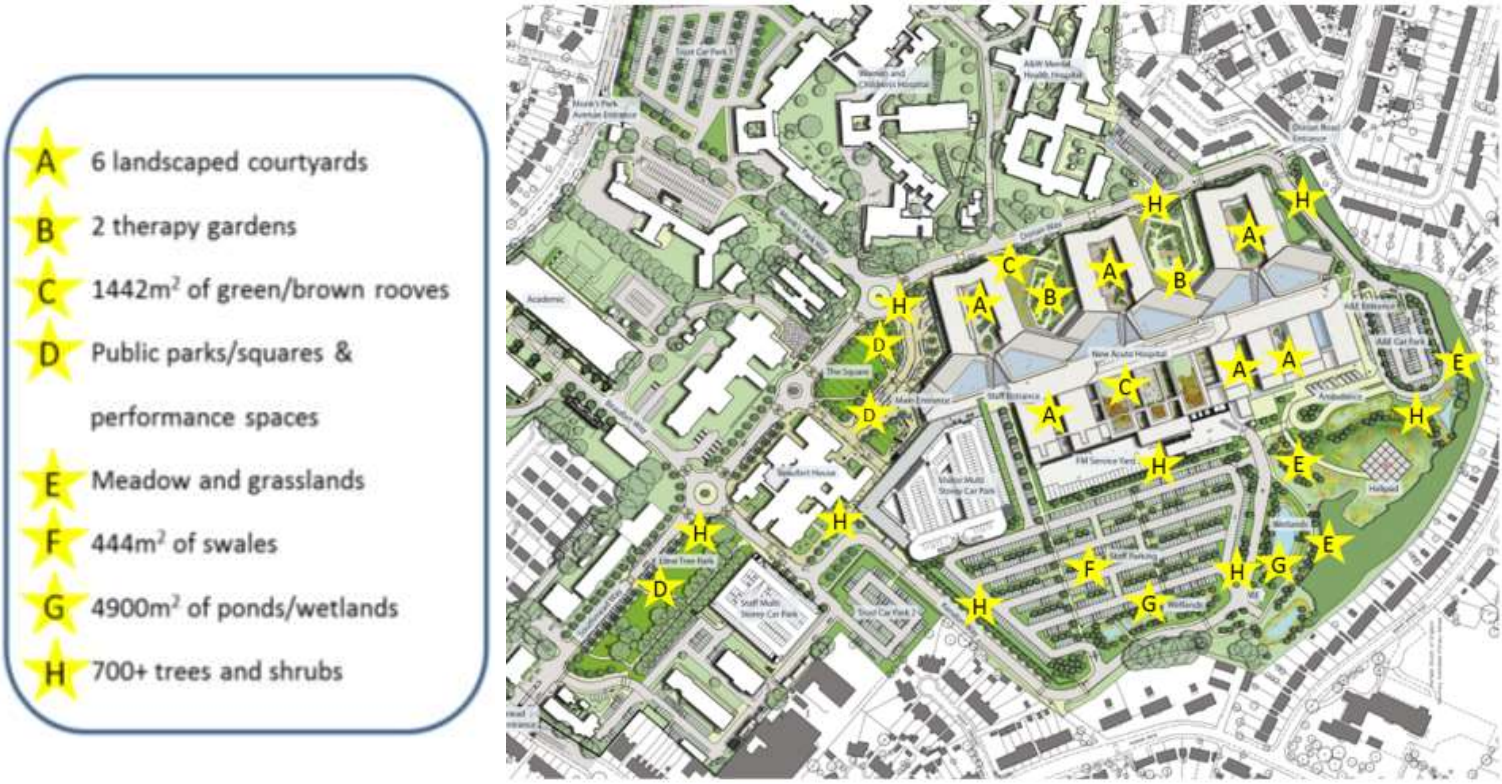


Figure 3: New green spaces and landscaping created during the development of the Brunel building

The West of England Nature Partnership highlights:

"At the strategic level, the NHS and Public Health England are committed to driving a more strategic, whole-person view of health – considering the wider determinants of health and the subsequent need to design-in health through the planning system, education, workplace, etc. There is strong high-level commitment to the social prescribing agenda which considers how health practitioners can prescribe community-based activities in lieu of pharmaceutical drugs."[8]

Promoting use and enjoyment of the green spaces on our hospital sites and advocating access to them via the green spaces in our local community are simple means of supporting this commitment.

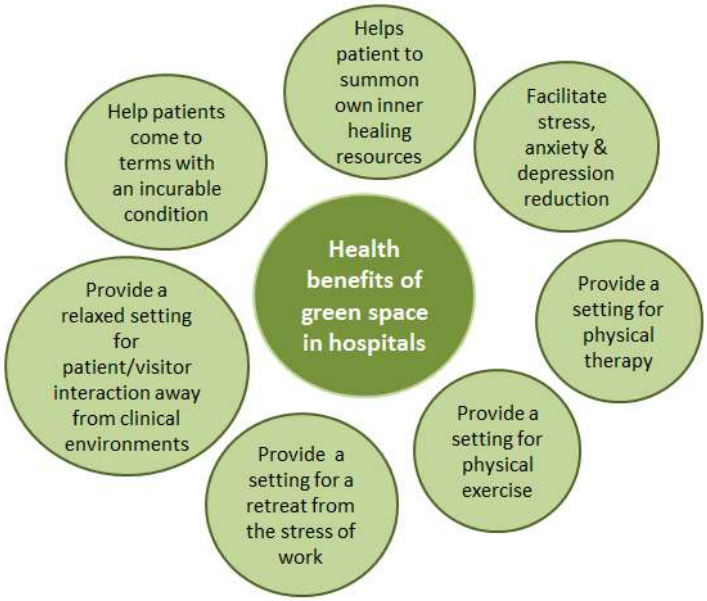


Figure 4: The health benefits of green space in hospitals

Equally, Public Health England sees environmental resources that enhance health and wellbeing as a community health asset.[9]

[8] West of England nature Partnership, Mainstreaming Naturally Healthy and Green Care, July 2018

[9] https://www.gov.uk/government/publications/health-matters-health-and-wellbeing-community-centred-approaches/health-matters-community-centred-approaches-for-health-and-wellbeing, Accessed 25.06.19.

The Trust is a keen advocate for the use of green space and exercise for the benefit of staff health and wellbeing and values the positive impact that this subsequently has on patient care. The Trust was rewarded in July 2019 for its forward-thinking approach through the award of an NHS Parliamentary Award for its Staff Wellbeing Programme. The use of our green and blue spaces for therapeutic activities will be explored as part of the Ways to Wellbeing project, drawing on the vast array of evidence of where this has been successful elsewhere.

iii. Wider benefits of greenspace

In addition to being beneficial for patients and staff, green space (and equally 'blue' space such as streams, ponds and lakes) of any size brings advantages for wildlife through the provision of shelter, food and water. It also plays a key part in reducing surface water run-off, providing cooling, absorption of pollutants and a buffer against the effects of extreme weather.

The benefits of attracting wildlife such as pollinating insects (bees, butterflies, hoverflies, etc.) to our site through the provision of pollen-rich planting not only provides a food source for larger animals such as birds and bats but also helps safeguard the vital activity of pollination that these insects provide.

With careful planning and management our green spaces can potentially deliver resources for wildlife that would be unexpected in a suburban location and facilitate movement of wildlife through the surrounding area.

iv. Current biodiversity management overview

North Bristol NHS Trust recognises the value and importance of high quality green spaces. Our Grounds team are supportive of and engaged in efforts to increase the potential of this green space for the benefit of local biodiversity. The Southmead site is part of the NHS Forest Network (http://nhsforest.org/southmead-hospital) and has accessed the scheme's free trees to enhance the site.

The Trust has sought expertise from a variety of organisations to advise on the options for enhancing and protecting biodiversity on our sites, for example Avon Wildlife Trust on creating 'stepping stones' for wildlife and improving the habitats for pollinators courtesy of Urban Buzz. The National Garden Scheme has created a garden at the Macmillan Wellbeing Centre that is both attractive and has abundant pollen-rich species.

Trust policies (Sustainable Development) and strategies (Estates) commit us to managing and maximising our green space assets. We engage regularly with staff, patients and visitors to raise awareness of and promote access to our greenspaces.

The strategy for linking the natural environment with wellbeing and healthcare is delivered

through the Trust's Wellbeing Pathfinders project which involves staff from the sustainability, arts, human resources and occupational therapy teams. The project seeks to link key elements within the Southmead site, including points of biodiversity interest, artwork, exceptional green/blue space to create opportunities for exercise and relaxation outdoors.

The project is also seeking to enhance this provision by developing new facilities such as the green gym and staff allotment and has commissioned a co-ordinator to explore the full potential for the inclusion of our green spaces in both existing and new Trust activities. A project entitled Ways to Wellbeing is exploring the ways in which we use current green and blue spaces, seeking staff suggestions on spaces which could be enhanced, and identifying more activities, including therapy, which could be accommodated in the external environment.

The NHS is encouraged to maximise the potential of its green spaces for the benefit of all via the attainment of criteria in the Sustainable Development Assessment Tool (SDAT). This document aims to set out how NBT will achieve these criteria in relation to green space and biodiversity.

v. Southmead Hospital Overview

The Southmead Hospital site is situated in North Bristol, approximately 3km north of the city centre and largely consists of buildings, hardstanding, ornamental planting and amenity grassland, with other less prolific habitats including scrub, semi-improved grassland, hedgerows, mature semi-natural broadleaved trees and tall ruderal vegetation. In total the site has at least 19 acres of green space. It is in a predominantly urban location, although nearby parks, woodlands and gardens provide some ecological connectivity in the wider surroundings. The central Ordnance Survey grid reference of the site is ST 59076 77703.

Ecological surveys in 2015 and 2018 have found potential for wildlife, including protected species and habitats suitable for reptiles (slow worm presence has been recorded on the site before), amphibians, nesting birds, bats, badgers and small mammals such as hedgehogs exist on site. Excellent habitat for invertebrates has also been identified.

The Southmead site contains a variety of types of green space and developments with the newest building Brunel, being completed in 2014. The Brunel Building and grounds in which it sits are managed through a PFI contract with The Hospital Company (Southmead) Limited (THC) who sub-contract the FM services to Bouygues Energy and Services (see Figure 5 for the boundary of their site management). As such, management of green and blue spaces within that boundary fall to Bouygues and their grounds maintenance contractor. However to co-ordinate activities and because nature does not recognise the boundary, the Trust and Bouygues will create a Biodiversity Working Group to deliver the actions within this plan.

The specification for the new hospital building which opened in 2014 included a wide variety of measures to bring the benefits of the natural world into healthcare. The Brunel building was designed with integral planted courtyards and views of natural vistas to benefit patient recovery. Two gardens in particular were dedicated for therapy use with patients being

Figure 5: Extent of PFI management of Southmead site (red line)

encouraged to use the outdoor space as part of their rehabilitation. One of these includes a water feature.

A turfed and tree-lined ‘plaza’, including a sculpture of a lion with an injured paw, inspired by the large public squares in the centre of Bristol was created at the main entrance to the new building, flanked by a small amphitheatre for outdoor performances and events.

A new park, also incorporating artwork was featured in the original design and completed in 2019, together with an additional area of wildflower planting.

Green rooves, extensive swales within car parking and 2 new attenuation ponds were created to provide habitat, be visually attractive and reduce the site contribution to surface water run-off.

Grasslands and wildflower meadows surround the attenuation ponds and create a tranquil haven for staff, patients and visitors to enjoy within a short distance of the main building. Over 700 new trees and shrubs were incorporated into the site redevelopment, including some fruit species.

Even the indoor spaces benefited with the installation of 5 ‘winter gardens’ – planted spaces with trees that span multiple floors of the hospital and provide views of greenery for internally-facing patient bedrooms.

The redevelopment works on the Southmead site has led to an obvious improvement (Figure 7) in green spaces since the production of the Avon Wildlife Trust *My Wild City* map for the Horfield and Lockleaze area in 2015 (Figure 6), with a visible reduction in ‘areas with sealed surfaces.’

Figure 6: High levels of sealed surfaces and buildings in 2015 prior to redevelopment on the Southmead site.

Figure 7: Brunel Building and landscaping contribution to a reduction in non-permeable surfaces

1. A Welcoming Place

North Bristol NHS Trust sites have clear signage at all main entrances which welcomes visitors to site. Similarly there are site maps available on larger sites to enable visitors to find their desired location. Signage on site directs visitors to various 'quarters': Women and Children's, Science, Brunel and Limes. There are simple finger posts that are colour-coded according to the 'quarters' which aids visitors in navigating the site. In addition there are frequent site maps to aid with orientation.

There is a mixture of vehicular and pedestrian/cycle-only access points onto the Southmead site. The site is served by numerous bus services which stop outside the main Brunel Building entrance. The provision of cycle parking facilities is widespread and there are 90 motorcycle spaces available to the public. Staff and public parking areas are segregated with 94 disabled parking bays being widely available across the site.

There are a total of 753 public spaces across the Southmead Hospital campus and the site is readily accessible. Smoking is not permitted within the grounds and vehicles are encouraged not to leave engines idling through the provision of 'Switch Off' signage. The site has a 15mph speed limit which is supported through flashing speed limit signs and traffic calming measures (chicanes, speed bumps). Bollards protect pedestrians at designated crossing points.

There are many users of the Southmead site including staff, patients, visitors and also the local community using the site as a cut-through to other areas, e.g. local schools. Some come to the site for healthcare appointments or for work whilst others use the bus interchange located at the front of the Brunel building or are visiting in-patients. The site has minimal access by dog-walkers for exercise purposes but is used as a less traffic-intense route to reach local greenspaces.

Similarly local children use the site as a more pleasant short-cut route to reach local schools. The site is not in itself currently a destination for those seeking green space but the Trust is actively pursuing opportunities to encourage the use of the Southmead site for exercise and relaxation, both of which complement the healthcare services provided on site.

Southmead Hospital site has been undergoing development for a number of years in association with the creation of the Brunel

Building which now houses the vast majority of Trust services. Ease of movement around the site both for vehicles and pedestrians has been a key priority and clear sightlines through the site are enabled by boulevards (Dorian Way and Monks Park Way) and areas of green space such as the main Plaza and upcoming Lime Park. The sheer size of the Brunel Building in comparison with others on site means that it is generally visible from most of the rest of the site, making navigation easier.

The site is clearly signposted in the surrounding areas for cars, bicycles and pedestrians.

There is a dedicated ‘quietway’ cycle route from one of the major roads to the hospital (Gloucester Road) which brings cyclists (and also pedestrians) to site using quieter back roads and which terminates at the Kendon Road entrance. There are 2 pedestrian/cycle-only entrances via Kendon Road and Monks Park Road and 3 entrances to vehicles coming onto site via Southmead Road, Monks Park Road and Dorian Road.

There are numerous areas of shared space which are clearly signposted and the provision of facilities to encourage active travel is widespread. Delivery and service vehicles (supplies, waste, linen, etc.) are segregated from public access routes, as is the main area of staff parking, both of which are located to the rear of the site and which come through the largest area of green space on site, Avon Way.

There are excellent public transport links to the site which now acts as a local transport hub (39 buses per hour at peak times), allowing staff and visitors to reach the hospital but also facilitating the local community to travel with ease into the city centre and other destinations. Buses and taxis drop visitors at the front of the main Brunel building from where they can access services across the site. The Trust has worked with the local transport operators to ensure that services that come to Southmead Hospital are timetabled to allow staff to arrive on site before the main shift start times and also to give them time to reach the bus stops after a shift ends.

2. Healthy Safe and Secure

2.1 Quality facilities and activities

Southmead Hospital is foremost a site delivering healthcare services, however to reap the benefits highlighted by the research in section ii of this document, the use of the external spaces to support traditional interventions, therapies and other services is also part of NBT's offering to patients.

The hospital grounds provide a range of spaces for people to use from more formal gardens and courtyards in the centre of clinical spaces to more natural, quieter areas. Seating is available across the site in the form of benches and picnic tables, all of which are maintained by either the hospital's PFI Service Provider Bouygues or the Trust's own Grounds team.

Accessible green gym equipment is planned on the site for use by staff, patients and the local community. This will be accessible to all and will encourage exercise and the use of green space, the subject of 2019 NICE quality standard 183, which encourages outdoor physical activity in the community. A staff and patient allotment is also planned for gentle exercise, relaxation outdoors and companionship. Southmead Hospital grounds form part of staff lunchtime walks into the local community and also by the public following routes on the 'Walk North Bristol' walking map which was produced for NBT clinicians, GPs and other local social prescribers to encourage people to explore our site.

Site users will find toilets and drinking water available in many of our buildings with catering outlets being present in the Brunel, Brain Centre and Learning and Research buildings.

2.2. Safe Equipment and facilities

The Trust's PFI provider Bouygues is responsible for the management of facilities within the portion of site under their control and this includes equipment such as the life rings located at the attenuation ponds and public seating. These are inspected on a monthly basis. The shallow (approximately 1m deep) attenuation ponds that retain surface water run-off to reduce local flooding are not fenced but instead natural planting is used to reduce possible access into the water.

NBT's Grounds team inspects external furniture frequently as part of mowing and other routine activities. The planned allotment will be managed by the Trust's Sustainability team in conjunction with Grounds and they are responsible for checking tools, the greenhouse and other allotment equipment for damage or wear and tear.

There is a process for seeking approval of all events on the Southmead site whether held internally or externally. This includes the submission of risk assessments which are reviewed by the Trust's specialist advisors such as Health and Safety, Fire and Security.

2.3 Personal security

All site entrances are open at all times of the day meaning that access is not restricted. To protect people and property NBT sites are all covered by CCTV with the larger sites being patrolled by Security staff and Southmead Hospital forming part of the local Police Community Support Officer beat. Sites are well-lit and due to the 24 hour nature of the main site, Security presence is available around the clock. External spaces have been planned to ensure that planting does not pose a security risk during hours of darkness with the largest staff car park on Avon Way having smaller canopy trees which do not impede lighting and lower-growing shrubs.

However these are bolstered by grassed swales between the rows of car parking to maximise habitat for invertebrates and capture run-off. Out of hours Security staff are available to escort staff or the public to their vehicles. Bus services serve Southmead Hospital late into the evening but these stop in the illuminated main square at the front of the Brunel Building.

2.4 Control of dogs

As the site itself is not a natural destination for green-space seekers, dogs are not routinely exercised on the premises. A number of staff guide dogs use the green spaces for exercise and toileting however these are kept on a harness. Dogs passing through the site with their owners are kept on leads due to the presence of traffic. Litter bins are available for dog-related waste if required.

3. Well maintained and clean

3.1 Litter and waste management

The hospital's Facilities Management directorate is in the process of introducing the environmental management system standard ISO14001 and through this process is fully aware of legislative requirements. Procedures are in place to manage key areas of impact including waste management. Incidences of fly-tipping are reported to the Sustainable Development Unit and recorded as part of the EMS.

Litter bins are available across the site and those within the PFI portion of site also incorporate recycling facilities (although these contain significant contamination with non-recyclable items). These are emptied daily. Smoking is not permitted across the site with smokers being encouraged to the site exits where dedicated cigarette bins are available. A trial was conducted to see whether the provision of dedicated shelters on site would encourage smoking away from the main building entrances and reduce or contain smoking-related litter (cigarettes and chewing gum) however they were found not to make a difference and the site-wide ban was re-introduced.

NBT's Grounds team and Bouygues' grounds contractor are responsible for the following:

NBT Grounds Team – retained estate	Bouygues – PFI estate
Emptying external litter bins (daily)	Emptying external litter bins (daily)
Litter-picking (daily)	Litter-picking (monthly)
Day to day maintenance of equipment including external seating	Day to day maintenance of equipment including external seating
Hedge cutting	Hedge cutting
Tree maintenance	Tree maintenance
Grass cutting, edging of paths and strimming	Grass cutting, edging of paths and strimming
Planting bedding plants/bulbs/seeds	Planting bedding plants/bulbs/seeds (Nov-Mar)
Leaf clearance	Leaf clearance
Winter gritting when required (via contractor)	Winter gritting
Minor paving repairs (building/Estates maintenance)	Minor paving repairs
	Pond management (silt control, vegetation management, silt removal from catch pits/soakaways/cellular storage, life buoy checks, repairs and reinstatements)

Figure 8: Grounds staff duties.

Any issues relating to waste management or any other building/outside space issues are reported to the FM Helpdesk where it is assigned to either NBT Facilities Management service or Bouygues depending on the location. External waste and recycling bins serving nearby buildings are predominantly housed in disposal corrals and the bins within are kept locked to prevent the occurrence of fly-tipping and the risk of wind-blown waste. These bins are emptied daily by Trust porters.

3.2 Horticultural Maintenance

The NBT Grounds team consists of 4 full time staff and 1 part-time. All new starters with the team are expected to have an NVQ level 1 in gardening. All those responsible for spraying herbicides must hold the NPTC PA1 (use of controlled droplet sprayer) qualification. Staff using the knapsack sprayer also need to hold the PA2 qualification. Bouygues' grounds maintenance contractor also hold these qualifications. Training for this qualification does not require renewal.
Similarly those who use the site tractors hold the requisite NVQ in tractor driving/maintenance. Where specialist skills are required these are contracted in, for example tree maintenance.

As part of the PFI agreement between NBT and The Hospital Company (Southmead) Limited (THC) there is specification for planting and maintenance, including for the Sustainable Urban Drainage System (SUDS). For example no more than two thirds of the surface of the water should be covered by aquatic or marginal plants. Checks are made to ensure compliance with the contract requirements and should defects exist there is a penalty process in place. Outstanding defects such as trees which have died post-planting following the re-development are rectified.

Rainwater from the Brunel building is collected via a roof rainwater harvesting system which consists of 20,000 litres of underground storage which feeds a 1,000 litre rainwater harvesting kiosk to enable easy access for grounds maintenance and irrigation functions. This reduces the quantity of water that would feed into the local surface water system and reduces the need for potable water to be used for irrigating plants.

Green waste arisings are removed from areas such as meadows so as not to improve the nutrients and encourage non-wildflower species however in other areas green waste such as grass cuttings and autumn leaves are left to rot down. Other green waste is removed from site by the Trust's waste contractor and composted.

In some areas of the hospital site staff have requested permission to erect bird feeders and sow wild flower seeds. There has also been an increase in the numbers of clinical areas wishing to have enhancements to their outdoor spaces to include areas for growing flowers and other plants or food, or for natural shading.

3.3 Arboricultural and woodland maintenance

Trees on site are surveyed on a 24 month frequency with dangerous trees being addressed when required. There are 16 trees with Tree Protection Orders on the Southmead site (although 6 of these are managed by NHS Blood and Transplant) for which permission is sought prior to any maintenance. Specialists are employed to advise on works conducted near trees including within Root Protection Areas.

Felled trees are commonly left on site to provide a refuge for wildlife. Dead wood is either left to decay or disposed via the green waste stream.

Wood generated by tree maintenance work is either shredded and removed by the contractor (smaller quantities), with larger pieces being left on site and used as habitat or taken home by staff. Tree trimmings as part of maintenance work are regularly shredded and used on site as mulch.

The Trust uses the national NHS Forest scheme for sourcing new tree and hedge specimens and has used a wide variety of species to manage gaps in the existing site planting and to plant trees in new areas. In 2018-19 we planted new 35 trees and 12 Cornus, 24 Hawthorn and 12 Buckthorn to fill in the gaps of the hedgerows. For site developments the Trust abides by the Bristol Tree Replacement Standard replacing each tree lost with an appropriate number of new trees depending on the trunk width of those removed. Our Estates strategy encourages the use of native species and those which will be of ecological benefit.

3.4 Building and infrastructure maintenance

Building and road maintenance across the site is the responsibility of the Estates Maintenance (EM) or Bouygues depending on the location, with the EM team being responsible for infrastructure such as picnic tables, benches and fences, and the removal of graffiti. The Grounds team manage weeds and this is predominantly achieved through the application of mulch. Faults, defects, damage and repairs are reported via the FM Helpdesk and dealt with by either EM or Bouygues.

3.5 Equipment maintenance

Policies and procedures exist for the checking and maintenance of equipment used by grounds staff (e.g. tractor, tools) and by the public (green gym, picnic benches). Annual maintenance is conducted on tractors/ride-on mowers with daily checks being made on smaller pieces of plant. There is a schedule of planned preventative maintenance with regular servicing of appropriate kit.

The maintenance schedule is managed via the Trust's Planet software which lists which work is required when (daily, monthly, weekly and annual tasks). The Grounds team conduct daily visual inspections of equipment, weekly technical inspections, together with annual inspections by specialists (e.g. for the planned green gym equipment.) Benches are brought in each winter for any repairs and other maintenance. They are assessed fortnightly during the grass-mowing season.

The team are provided with dedicated, secure containers for equipment (e.g. controlled droplet and knapsack sprayers) with separate containers being available for fuels and for chemicals. Spill kits are available within the fuel store and a spill response procedure and training is provided to reduce the risk of pollution from a spill event. All staff undertake mandatory training (including fire, health and safety, waste management) on a periodic basis and this is bolstered by Toolbox talks on a variety of subjects (e.g. re-fuelling). There are periodic noise and vibration assessments of relevant kit.

All Facilities Management staff are provided with the necessary PPE (high-vis, uniforms, gloves, hard hats, footwear, ear defenders, etc.) for their role.

4. Environmental Management

The Trust has a Sustainable Development Policy which sets out our commitments across a wide range of sustainability topics including energy, waste, water, travel, climate change, carbon emissions, sustainable models of care and biodiversity. The Policy commits to the following:

- We will protect and enhance the environment and prevent pollution.
- We will maximise access to the natural environment for the benefit of people's health and wellbeing and for the prevention of avoidable illness.

As mentioned earlier we also work towards the UN Sustainable Development Goals through meeting the criteria in the Sustainable Development Assessment Tool (SDAT), with Life on Land being the most relevant to this plan. A selection of the 26 criteria relating to green space include:

- We have a board approved green space and/or biodiversity action plan/strategy.
- We design new buildings and access routes to buildings with embedded green space and use green space constructively (e.g. green roofs and green infrastructure to minimise air pollution).
- We have assessed the impacts of the provision of our services on local biodiversity and this has allowed us to put in place mitigating actions to reduce these impacts (e.g. appropriate bunding around fuel stores, treatment of effluent, dimming or cowling on external lights etc.)
- We provide green and natural areas on our estate even where land is constrained (making use of small areas even when we don't have large external areas. e.g. window boxes, verges and potted plants).
- We work with local greenspace and biodiversity partners such as wildlife trusts, local bee keepers, or the local nature partnership to improve biodiversity on our estate in line with local strategic plans.
- We can evidence that biodiversity has improved due to our actions (e.g. increase in accessible green space, increase in local species (animal and plant), reduction in invasive species).

The criteria are translated into actions and progress against them is monitored through assessment against the tool. Details of objectives, targets and progress are laid out in the Trust's annual Sustainable Development Management Plan (SDMP) which is approved by the Trust Board every September. This Plan and the associated action plan will be the delivery mechanism for achieving progress against the biodiversity-related criteria.

4.1 Managing environmental impact

As part of our Environmental Management System we have identified a number of impacts in association with the management of our green spaces:

- Use and storage of oil
- Use and storage of chemicals
- Generation of green waste
- Water consumption
- Climate change adaptation

These impacts are managed through appropriate procedures, safe systems of work and control measures.

The Trust consumes a significant quantity of natural resources on an annual basis, with energy costs for gas, electricity and oil exceeding £6,000,000 a year, with an additional £650,000 spent on water and £700,000 on waste. The Trust also uses substantial quantities of petrol (fuel), food, paper and numerous clinical products and pharmaceuticals. As a result, the Trust has a sizeable carbon footprint, contributing to the effects of climate change and its associated impacts, both locally and globally.

Climate change is described by the World Health Organisation (WHO) as "the biggest global threat to health facing the twenty first century". Defined as the change in climatic patterns largely attributed to the increased levels of atmospheric carbon emissions produced by the use of fossil fuels, it is predicted to increase the number of heat and cold related illness and deaths, increase the amount of food, water and vector-borne diseases (e.g. malaria), increase incidences of skin cancers and sun burn, increase the health impacts of respiratory disease from poor air quality and aero-allergens and likely bring about an increase in mental health issues as a result of local social impacts.

The Trust recognises this critical relationship between the natural environment, the impacts of climate change, the wider determinants of health and the resulting increased demand on our services. By embedding sustainable development we will mitigate our own contribution to climate change, as well as adapting to the impacts of climate change across our sites and services to deliver a truly sustainable healthcare service fit for the future.

4.2 Climate change adaptation strategies

Through the careful use of climate change adaptation measures our sites are more resilient in changing climates and provide a welcome outdoor space for staff, patients and the local community.

Adaptation measure	Benefits
Tree planting	shelter, urban cooling, pollution absorption, habitat, mental health and wellbeing
Sustainable urban drainage systems	habitat, reduced water run-off/local flood risk, solar reflection, mental health and wellbeing
Creation of green spaces	habitat, solar reflection, mental H&WB
Drought-tolerant planting	reduced water use, reduced risk of loss through prolonged periods of dry weather, pollen-rich (rosemary, lavender etc.) species also benefit biodiversity.

Figure 9: The benefits of some adaptation measures for green spaces

The Trust has produced a draft Climate Change Adaptation Plan for the healthcare providers in the region which is the process of being approved. It contains reference to how green spaces can be used support climate resilience and adaptation with therapeutic gardens, encouraging biodiversity and growing food being cited as possible options. It lists the recommendations from the local planning authority and NHS England which all members of the Bristol, South Gloucestershire and North Somerset Sustainability and Transformation Partnership (BNSSG STP) are encouraged to consider as part of their adaptation planning:

- Maximising planting and use of green space to promote biodiversity
- The use of drought tolerant species
- Indigenous and nut or fruit bearing trees and bushes specified in landscaping.
- Wildflower planting
- Tree / shrub planting
- Street trees provide shade and buffer wind.
- Accessible external space is provided wherever possible,
- External spaces include an element of shade through measures such as trees, canopies and awnings.
- Living walls and green roofs help to cool and shade buildings.
- Tree planting to provide summer shade
- Sustainable Urban Drainage systems (SUDs);
- Attenuation ponds
- Flood resilience measures
- Rainwater harvesting

The Trust's draft Estate Strategy also commits to supporting biodiversity through the development of new facilities with the following sustainability requirements in relation to biodiversity and green space:

- Inclusion of high quality green space
- Provision of green and natural areas even where land is constrained (e.g. window boxes, verges, potted plants)
- Provision of native species and planting of ecological value
- Use of trees to provide shading where appropriate
- Creation of new habitats where possible
- Consideration of the inclusion of wildlife encouragement methods (e.g. bird & bat boxes, food growing opportunities, wildflower meadow & bank planting, provision of pollen rich species
- Indigenous and nut or fruit bearing trees and bushes,
- Inclusion of pollen-rich plant species to encourage pollinators
- Use of living walls and green/brown roofs.

The Trust's annual business planning process prompts staff to identify how climate change may impact on services and identify any key risks within business continuity plans. Similarly all business cases must consider the potential impacts on the environment from the product or service being procured.

Some of the potential risks of climate change for our plant life include (taken from Natural England Climate Change Adaptation Manual):

Cause	Potential Impacts on plant life	Impacts for pests & disease
Hotter summers	Sun scorch, changes to flowering and seed-setting.	Reduced generation time of insect pests.
Drier summers	Premature deaths of mature/veteran trees, changes to ground flora if canopies die back, greater risk of fire damage, root stress, defoliation, premature fruit drop/reduced size (fruit trees), species change (e.g. prevalence of annuals over perennials, deeper-rooted or those with underground storage organs), stress for drought sensitive trees species (e.g. birch and sycamore).	
Warmer winters	Incomplete winter dormancy (e.g. fruit trees), increase in diseases, reduced chill requirements leading to reduced flower/fruit development (e.g. berry-producing species), earlier bud burst (and subsequent vulnerability to frost), reduced seed germination.	Greater survival of pest species, soil pathogens.
Wetter winters	Impacts of flooding, increased likelihood of wind throw, waterlogging and root rot.	
Increased frequency of extreme events	Greater risk to trees with large crowns (if pollarding has not been maintained), loss of veteran trees and associated species, greater stress and vulnerability to pest species.	

Figure 10: Potential risks of climate change for flora

To reduce our contribution to climate change through the excessive consumption of resources the Trust has implemented the following measures:

- Solar photovoltaic energy generation across several buildings
- Water-efficient features within the Brunel building, rain water harvesting and SUDS
- Sustainable design of the Brunel building which has bettered the 40Gj/m^3 energy target set for it through high levels of insulation, maximum use of natural ventilation, solar orientation, high levels of natural lighting and intelligent lighting.
- Exemplary sustainable transport options for staff, patients and visitors.

4.3 Chemical use

North Bristol NHS Trust uses herbicides on hard surfaces such as paving or scalpings. Strimming is the more common method for combatting unwanted weeds unless a specific problem has been encountered (e.g. horsetail at the Data Centre where the plants were trodden and then herbicide applied.) In some areas the immediate area around a building is kept weed-free by staff as part of their wellbeing activities.

The Grounds team only uses fertilisers (e.g. blood, fish and bone) on the site's roses.

The types and quantities of chemicals used, which include glyphosate, are available on the Trust's Planet system. Where chemicals are used the Grounds team use Nomix Environment products are because they offer a collection system for empty containers (5 litre boxes with foil bags within and stored in a sealed drum.)

The chemicals are stored securely and spill kits are available. Chemicals and fuel are transported between the main Southmead site and our other sites and the vehicles used have separate containment within for storage during transit. These are checked as part of our annual Dangerous Goods Safety Advisor inspection.

Where chemicals need to be used near water (e.g. grass removal near attenuation ponds prior to re-sowing with wildflower mix), prior permission is sought from the Environment Agency.

The Bouygues' grounds contractor uses glyphosate for weed control.

4.4 Peat use

Neither the Trust nor Bouygues use any peat or peat-based products.

5. Conservation and heritage

5.1 A measure of current biodiversity – Survey Results

The extended phase 1 habitat surveys looked both at what was present on site and the potential suitability of the site to support notable or protected flora or fauna. No sites showed any evidence of invasive species. Two surveys have been completed, one on each site (Cossham, Southmead, Thornbury and Riverside) in 2015 and another in 2018 to examine a portion of the Southmead site that was not accessible during the 2015 surveys. The green spaces at the Thornbury and Riverside sites are no longer managed by North Bristol NHS Trust. Sites that are leased (Bristol Centre for Enablement and South Bristol Renal Dialysis Unit) sit within limited grounds and these are not managed by NBT.

The tables below highlight the habitat types and a selection of flora found on the Southmead site, together with evidence of fauna.

Habitat Type	Species evident
Poor semi-improved grassland	Cock's-foot (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*).
Semi-improved neutral grassland	Perennial rye-grass (*Lolium perenne*), red fescue, yarrow (*Achillea millefolium*), white clover (*Trifolium repens*), daisy (*Bellis perennis*), ribwort plantain (*Plantago lanceolata*), bristly ox-tongue (*Helminthotheca echioides*), wild carrot (*Daucus carota*), hoary plantain (*Plantago media*), hare's-foot clover (*Trifolium arvense*), bird's-foot trefoil (*Lotus corniculatus*) and creeping buttercup (*Ranunculus repens*).
Seeded meadow grassland	Knapweed (*Centaurea nigra)*, yarrow*,* bird's foot trefoil, common buttercup (*Ranunculus repens)*, white clover, creeping thistle (*Cirsium arvense)*, common sorrel (*Rumex acetosa),* sow thistle (*Sonchus* sp.), false oat-grass (*Arrhenatherum elatius)* and perennial rye-grass.
Fallow grassland	*Greater Burdock (Arctium lappa)*, creeping thistle, ragwort (*Senecio jacobaea)*, broad-leaved dock (*Rumex obtusifolius)*, teasel (*Dipsacus fullonum)*, sow thistle, common sorrel, Oxeye daisy (*Leucanthemum vulgare*), purple vetch (*Vicia benghalensis*)
Semi-natural mixed woodland	Common lime (*Tilia x europaea*), Scot's pine (*Pinus sylvestris*), elder (*Sambucus nigra*), willow (*Salix sp.*), oak (*Quercus sp.*), silver birch (*Betula pendula*), hawthorn (*Crataegus monogyna*), yew (Taxus baccata), field maple (*Acer campestre*). Understory species: young hawthorn and sycamore (*Acer pseudoplatanus*), Ground layer: field maple saplings, red fescue (*Festuca rubra*), ivy (*Hedera helix*), Yorkshire fog, Herb Robert (*Geranium robertianum*), common nettle (*Urtica dioica*).
Amenity grassland	Dominated by perennial rye-grass, with species such as creeping buttercup, daisy and ribwort plantain also present.
Scrub	Blackthorn (*Prunus spinosa*), bramble (*Rubus fruticosus*), ragwort, spear thistle (*Cirsium vulgare*), teasel (*Dipsacus fullonum*), wild strawberry (*Fragaria vesca*), ox-eye daisy, wild carrot, bristly ox-tongue, common knapweed, creeping buttercup, cleavers (*Galium aparine*), creeping thistle (*Cirsium arvense*), broadleaved dock, cock's-foot, burnet (*Sanguisorba officinalis*), buddleja (*Buddleja* davidii), snowberry (*Symphoricarpos albus*), Sedge sp. (*Carex sp.*), hawthorn, sycamore, ash (*Fraxinus excelsior*), holly (*Ilex aquifolia*)
Species-poor hedges with trees	Beech (*Fagus sylvatica*), silver birch and rowan (*Sorbus aucuparia*)
Defunct species-poor hedges	Hawthorn, guelder rose (*Viburnum opulus*), holly, blackthorn, hazel (*Corylus avellana*).
Mature broadleaved trees	Sweet chestnut (*Castanea sativa*), willow sp., ash, sycamore, field maple, horse chestnut (*Aesculus hippocastanum*), Scot's pine, cherry (*Prunus sp.*), tree sp., foxglove tree (*Paulownia tomentosa*), oak sp., common lime and beech, poplars (*Populus* sp.), ash (*Fraxinus excelsior)*, oak (*Quercus robur)*, hawthorn, Norway maple (*Acer platanoides)*
Waterbodies	Yellow iris (*Iris pseudacorus*), dried algae, amphibious bistort (*Persicaria amphibia*), bulrush (*Typha latifolia)*

Figure 11: Habitats and species on the Southmead site

Species	Evidence
Badgers	Several badger paths were found running through the woodland and regular latrine sites were found around the attenuation pond.
Bats	No evidence seen however the wetland areas are likely to provide an important source of invertebrates for foraging bats. The band of trees that runs along the western and southern boundaries will also provide suitable foraging habitat, as well as cover for commuting between foraging areas and roosts. There are several buildings and trees that may have potential for roosts.
Amphibians & reptiles	Multiple large brash piles and grass piles present, providing potential refugia to amphibians and reptiles. Frog, toad, smooth newt and palmate newt are likely to be present. There is ample foraging habitat within the grassland. Slow worms are known to have been present historically.
Hedgehogs	Multiple large brash piles present, providing potential refugia to hedgehogs.
Birds	The site has a good variety of habitat for nesting roosting and foraging birds. Trees and scrub around the edge of the Site provides suitable nesting habitat. The wetlands and grasslands provide foraging habitat in the form of invertebrates and seed-heads. The presence of bull rush also provides nesting material for some passerine species.
Invertebrates	The site exhibits an excellent invertebrate community for an inner-city location: common blue, gatekeeper, speckled wood, meadow brown, large white butterflies, small skipper, marbled white and small tortoiseshell, field and meadow grasshoppers, common darter and emperor dragonflies, blue-tailed damselfly, red-tailed bumblebee, honey bee. There is a healthy aquatic invertebrate population present: whirligig beetles, water boatmen and pond skaters.

Figure 12: Evidence of fauna on the Southmead site

As at 25th June 2019, the Environmental Record Centre for the West of England holds records for 79 different species located within 1km of the centre of the Southmead Hospital site which have been recorded since 2017. Of these only 3 are priority species and all three are moths (blood-vein, latticed-heath and dusky thorn). The West of England Nature Partnership State of Environment Assessment mapping tool identifies Southmead Hospital and much of the surrounding area as having potential for grassland creation and flower rich meadows. There is also potential to introduce species listed in the Bristol BAP to areas of site where there is suitable habitat, for example the Bristol Whitebeam or Bristol onion.

5.2 Habitat Management

Different habitats have different management methods. The wildflower areas for example are only mown twice a year and to prevent the enrichment of the soil with nutrients from decaying material, the grass cuttings (arisings) are removed from the area. Suitable trees are pollarded at intervals to encourage more bushy growth and maintain their height. The attenuation ponds are kept free of an excessive amount of plant life in order that they can still retain sufficient quantities of run-off and open water. They are also dredged as necessary to remove silt build-up and dredged materials are left on the banks for 24 hours to allow any aquatic species to return to the water. The survey has recommended that the new grassland areas (a third at a time) be cut right back on rotation every 3-5 years with as much soil disturbance as possible. This recommendation has been fed into the action

plan. Similarly the grass verges within the car park have been mown in part and the survey recommends that this be reduced to one cut per season and from August and through the winter months the grasses be maintained at approximately 50cm. Areas of amenity grassland could be further improved through the sowing of wildflowers and subsequent reduced mowing.

The survey also recommended various areas around the site where bird and bat boxes can be erected, where log or brash piles can be created and suitable locations for amphibian refuges. There is also potential to work with neighbouring properties to create corridors for hedgehogs by ensuring a sufficient gap is available under boundary fences. Through the Urban Buzz project we have planted a variety of species to benefit pollinators throughout the flowering season and have been given suggestions for further planting to provide further foraging areas. Full details of the recommendations can be found in Appendices 1 and 2.

No UK BAP (Biodiversity Action Plan) priority habitats have been identified within the Southmead Hospital site. The Bristol BAP contains a number of priority habitat types, including ponds and open water, and scrub which can be found in small quantities on site. It also contains priority species of flora and fauna. Whilst the surveys conducted on site did not witness the presence of any of the listed species there are suitable habitats for many of them and more work is required to determine their presence or otherwise. Similarly there is potential to enhance the site for two species with specific action plans within the BAP, namely, hedgehogs and house sparrows, and to introduce plant species listed in the BAP that are suited to the habitats available on the Southmead site.

As part of our work engaging with the local community we will explore options for our site to act as part of a corridor or stepping stone for wildlife to move through the area.

The Trust is also in a good position to support the West of England Nature Partnership's aspirations to create a Nature Recovery Network: providing nature the space it needs to recover and thrive — while supporting our health and wellbeing through recreation, active travel, carbon capture, improved water quality and flood management.[10] The habitats present on site and those that could be developed would form part of a wider network or mosaic and could potentially help 'bridge' gaps in the current area.

5.3 Conservation of landscape features

The landscape of the Southmead Hospital site has been constantly changing over the years as new buildings are erected and old ones demolished however the single biggest change to the area has been the 2014 construction of the Brunel Building. Not only does the site now benefit from a high tech, efficient and beautiful

[10] http://www.wenp.org.uk/wp-content/uploads/2019/05/Towards-a-Nature-Recovery-Network-for-the-West-of-England-A-Methodology.pdf Accessed 26.7.19

main building but also has the advantages available from the extensive landscaping and planting associated with it.

The design of both the building and the site overall has been carefully planned as described in the introduction. The hospital grounds now have a completely different feel with dedicated seating in the park, plaza, amphitheatre and wildflower meadow areas being a clear indication to all that they are welcome to come and sit in these environments. The large numbers of new semi-mature trees and other plant life have resulted in a transformation of whole portions of the site, creating a new landscape which benefits wildlife and people alike.

5.4 Conservation of buildings and structures

The Southmead hospital site contains buildings dating back to the late 19th century with the Southmead Workhouse opening in early 1900. One of our buildings, Beaufort House, the 3-fingered building at the centre-top of the photograph below used to house the workhouse kitchen (as seen in figure 13). The photograph below shows that a significant portion of the site was set aside for growing food. The planned creation of the staff and patient allotment will not replicate the original size of the kitchen gardens but will provide some of the benefits for biodiversity that the original gardens would have had.

The site's oldest buildings (Somerset House, Westgate House and Beaufort House) do not have any conservation status however the Trust committed to retaining these buildings as part of the Southmead site re-development. Part of the building has been sensitively re-developed to house the Bristol Breast Care Centre and National Garden Scheme (NGS) Macmillan Wellbeing Centre.

Figure 13: Southmead Workhouse courtesy of Bristol Archives: 44819/3/101 (do not reproduce without permission)

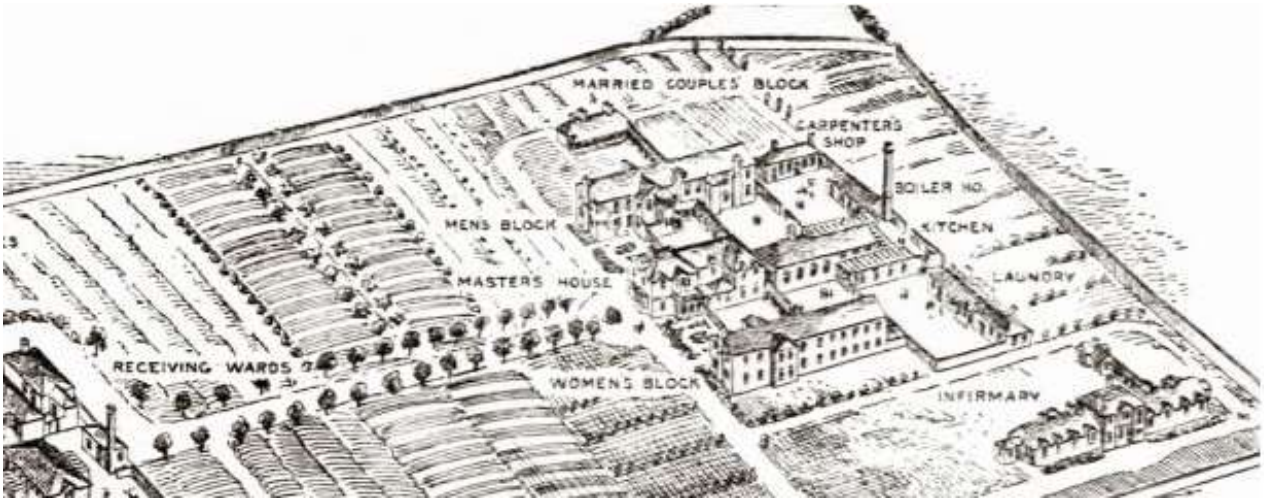


Figure 14: Southmead Workhouse hospital gardens, 1902.
©Peter Higginbotham, http://www.workhouses.org.uk

6. Community Involvement

Staff, patients, visitors and the local community are at the core of our efforts to involve people with our green spaces and educate them about our work to protect and enhance biodiversity.

6.1 Staff and Public Engagement

Engagement on environmental issues is a key activity of the Sustainable Development Unit (SDU) with a dedicated role to co-ordinate activity being created in 2017.

One of the main methods of engagement is through the staff award scheme Green Impact. Staff sign up in teams and work towards achieving various criteria and upon completion of a set number of actions earn points which equate to an award level.

At all levels there are criteria relating to health and wellbeing with access to green space being a key component. Staff can choose between actions such as: lunchtime walks, outdoor meetings, participating in SDU-organised events (e.g. large-scale insect hotel building) and national events (Wildlife Trust's 365 days wild, RSPB Big Garden Count), promotion of our green spaces, and projects to enhance green space for wildlife (e.g. seed planting).

Wider engagement and awareness-raising with staff and the public includes activities organised through specific events such as NHS Sustainability Day and Sustainable Health and Care Week. On these occasions we run workshops (e.g. insect hotel building), hold information stalls, run events including seed and bulb-planting, provide freebies (e.g. plant plugs, seed packets), publicise specific projects (e.g. lavender bags made from lavender harvested on site), fund-raise (e.g. through cake and lavender bag sales), large-scale picnics in the 'wild' areas of site and raise awareness of upcoming initiatives such as the staff and patient allotment and green gym equipment. These events take place either in high footfall areas such as the Brunel Building atrium or in one of our outdoor spaces (e.g. amphitheatre, meadow picnic tables, allotment site.)

Part of engaging with patients, visitors and the local community is to encourage greater understanding of the value of our green spaces and to ensure that the public know that they are welcome to use them. Access to green space is clearly recognised through the Trust's Health and Wellbeing Programme, with activities such as lunch-time walks being promoted corporately.

The advantage of raising awareness and engaging people is that good ideas to further improve green spaces, wellbeing or biodiversity follow. In 2016 a member of the Catering team suggested that the roof-top garden adjacent to the staff restaurant which had been provided as part of the original design, could be transformed into a herb garden containing 6 species of rosemary, 4 types of oregano, 5 different thyme species, 2 types of sage, lavender, mint and chives, and other herbs such as flax, hyssop, fennel and bay. The existing plants were removed and re-used on the Southmead site and a beautiful, sensory, pollen-rich herb garden designed and planted by Jekka McVicar was installed. Herbs from the garden are now used in staff and patient meals and the garden is managed by Trust staff and volunteers. An interpretation poster and leaflet explaining the benefits of the garden for food, health and wildlife has been installed at the entrance to the garden.

Similarly, following participation in the Green Impact programme, one inspired member of staff suggested using the fruit from trees to create juice. The Trust enlisted the support of the local National Trust property at Tyntesfield who have a fruit press and in Autumn 2018 held its first fruit-pressing event. Due to the hot summer the Trust's usually prolific apple tree had failed to fruit so to supplement the site pear trees' bounty we approached staff and local community organisation the Southmead Development Trust, to donate their surplus apples. The result was a refreshing supply of countless litres of juice which was given to staff, visitors and taken onto the nearby Elgar House wards for patients.

The Southmead Lavender project is another example of where engagement (initially on the herb garden) led to a suggestion by one of the Trust's volunteer to use the site's lavender bushes to make lavender bags. Since that suggestion in 2016 the annual Southmead Hospital lavender harvest, again bolstered by that grown by staff and volunteers, has been turned into fragrant, calming lavender bags which are made by volunteers and sold to raise funds for the Southmead Hospital Charity's Sustainable Healthcare fund.

The proceeds from the fund are used to support projects that further raise awareness of and engagement in sustainability and health and wellbeing. In 2019 it funded the purchase of an additional 50 lavender plants to fill an unloved strip of land outside our Brain Centre, together with supporting the staff and patient allotment creation.

Engagement with the community and more widely across Bristol has brought additional benefits in the form of sponsorship for projects and donations. Local company GKN Aerospace has provided financial support to deliver the allotment and Robbins Timber donated wood which was turned into bird boxes by carpentry students from SGS College Filton. Bristol Wood Recycling Project provided wood offcuts which were then drilled to the appropriate size by our PFI partner Bouygues for use in one of our large scale insect hotels.

7. Marketing and Communication

7.1 Marketing and promotion

We recognise that our green space hidden gems will remain that way unless we actively promote them and encourage their use. The Trust uses a variety of means for promoting its green space and raising awareness of biodiversity:

Social media: @NBTSustHealth, NBT staff *What's App* group, Facebook

Events: The SDU organises a wide range of engagement and awareness events and uses display boards, posters, leaflets, photographs, maps and opportunities to provide us with feedback or sign up to participate. These events have included NHS Sustainability day, Sustainable Health and Care week, insect hotel building workshops, seed giveaways, fruit pressing, site wildlife walks, *picnics by the ponds*, presentations etc.

Promotion: the SDU publicise national and local events that raise awareness and support for green spaces, wildlife and biodiversity, for example the Wildlife Trust's 30DaysWild, Bristol's Festival of Nature, the RSPB Big Garden Birdwatch and NHS Sustainability Day.

We share our experience and facilities with others to raise awareness of how NHS sites can be developed for the benefit of wildlife and people. In 2018 the Southmead site hosted the NHS Forest annual conference where attendees learnt about green space and the benefits for health and wellbeing, together with participating in a tour of the Southmead green spaces. The Trust also applies for awards to gain recognition for and raise awareness of its green spaces and the work is has undertaken. We were shortlisted for a Sustainable Health and Care award in 2018 for our innovative herb garden and in 2017 for how we use our green spaces (and the Brunel building) to engage on sustainability issues.

7.2 Appropriate information channels

We use different communication routes depending on the audience. For example we reach our staff using the monthly *SDUpdate* newsletter, staff Bulletin, Message of the Day or Friday Five. Not all our staff have access to electronic means of communication so these messages, particularly around specific engagement events, are complimented with posters to raise awareness.

Our engagement events are always open to the public and promoted in advance via channels such as social media, as news items on our internet site, local networks/partners (e.g. Bristol Green Capital Partnership, Southmead Development Trust), our sustainability newsletter and via word of mouth.

We also attend meetings of local community groups and promote our work and how to get involved at community fairs.

7.3 Appropriate educational and interpretational information

We provide an annual update on progress with biodiversity enhancement in our Sustainable Development Management Plan which is published on the Trust's website and to which we signpost interested parties, both internal and external.

Recently we have recently commissioned an interpretation panel to help visitors identify some of the wealth of species seen in our wildlife area at the rear of the site. We plan to develop a short leaflet to compliment the panel and to provide more examples of wildlife, more information on our plans to protect and enhance biodiversity and also what people can do at home to support wildlife.

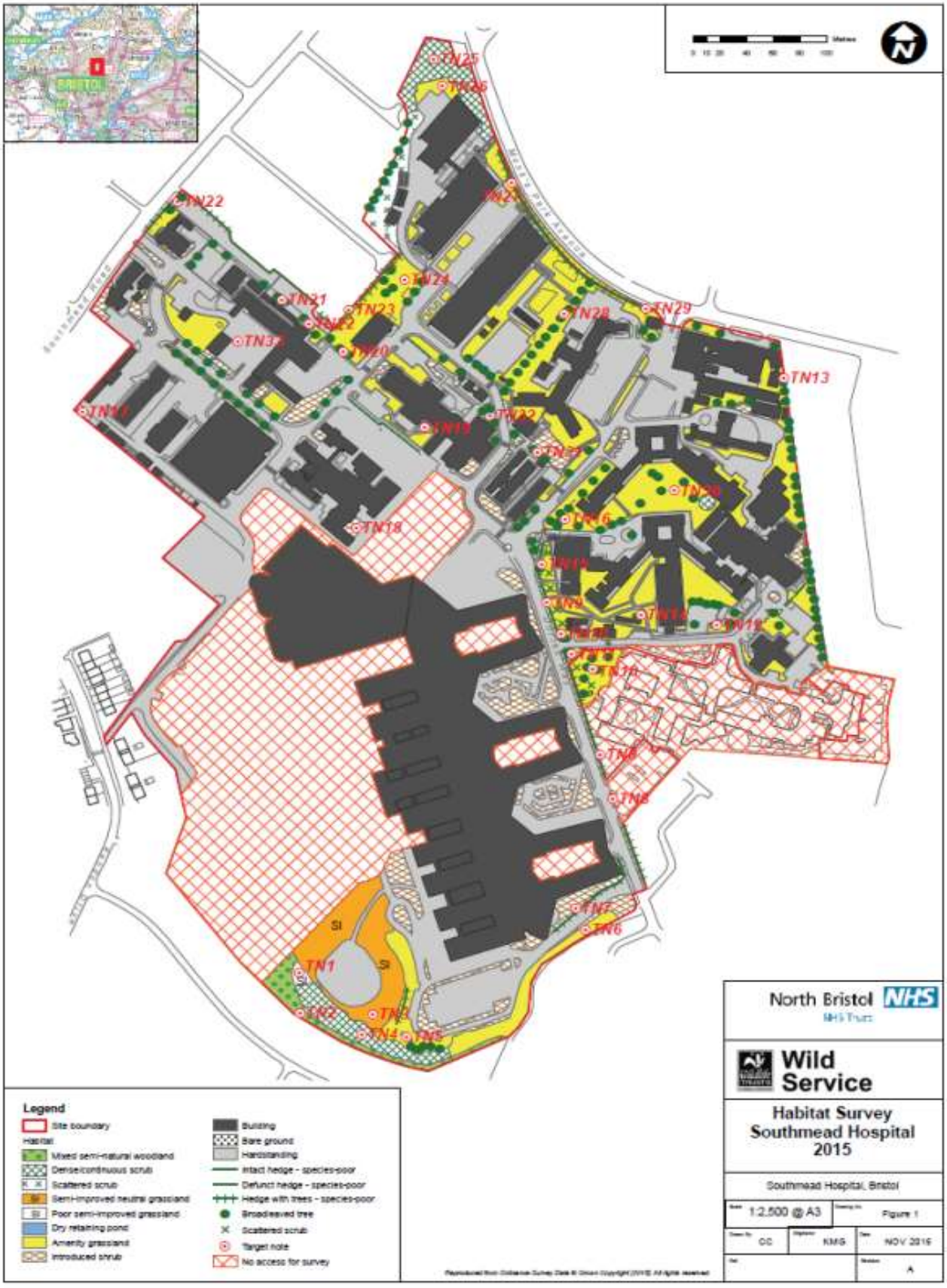
Every year we hold at least one public event to educate staff, patients and visitors on biodiversity and its importance. These have also on occasion been supported by a seminar or drop-in session on specific subjects such as “how to make your home and garden more wildlife-friendly.”

8. Management

8.1 Implementation of the management plan

This management plan will be implemented by those nominated through the action plan and progress against the predicted timescales will be monitored through the Biodiversity Working Group and reported to the Sustainable Development Steering Group. Progress against the action plan will also be reported annually via the Trust’s Annual Report and the Sustainable Development Management Plan.

Appendix 1a: Ecological Survey Site Drawing, 2015



Appendix 1b: Ecological Survey 2015 – recommendations

The ecological surveys have suggested a number of approaches the Trust could be taking to enhance our habitats. The 2015 ecological survey figure in Appendix 1 details a number of target notes which relate to the recommendations below:

Target note number or reference	Recommendation
5	The pond could be improved through landscaping - made deeper, with wildflower planting around the banks. A small number of log and/or rubble piles would provide amphibians and reptiles with refugia opportunities. Locate some on the northern bank to create basking opportunities for reptile species.
14	The pollarded willow could be made into a bird feeder and/or bird box 'feature' with the possibility of enhancement planting (e.g. wildflower seeding) and/or garden creation in the vicinity.
24	Ideal for log piles or similar to create amphibian refugia. 'Bug hotels' within the scrub or brash/compost piles could also be created. Bird boxes could be erected. Wildflower seeding or creation of a garden area could take place within the adjacent amenity grassland.
25 & 26	Opportunities for brash piles and 'bug hotels' were present, particularly along the interface between the scrub and recently seeded amenity grassland area, and especially if wildflower seeding took place across the slopes of this amenity area.
28	Allotment space could be created - allotments are notably beneficial for wildlife in the foraging and refugia habitats they provide for species such as badger, slow worm, grass snake, hedgehog and common garden birds;
28	The number of fruit trees on site could be increased, particularly in areas of ecological connectivity (e.g. the pear trees on Tyndalls Way)
5, 11, 17, 18, 22, 23, 24 and 25	suitable locations for a combination of ‘bug hotels’, compost heaps, brash and/or log piles
3 and 27 and along walkways	Increased hedgerow planting and in-filling of gaps with native species such as hawthorn and hazel would help to improve ecological connectivity around the site,
8, 10, 11, 12, 13-17, 19-21, 24 and 28-33	installation of bird and bat boxes
14, 18, 19 and 30	Bird feeders
Existing or renovated structures	Green roofs and walls could be considered
New lighting	this should be kept to a minimum (ideally 1 lux or lower) where close to semi-natural habitats and avoided entirely if possible in the vicinity of dedicated wildlife areas
Amenity grassland with low footfall	Conversion to wildflower meadow areas
General	Herb planting and bee hives could be implemented
General	Community participation could be further developed through liaison with neighbouring residential properties to identify willing participants able to cut small holes in the bottom of garden fences that border the hospital site. This would facilitate and ease travel for hedgehogs in particular.
General	Use Royal Horticultural Society guidance to incorporate species that are known to be of value to pollinating insects and other wildlife species into future soft landscaping works.

Appendix 2a: Ecological Survey Site Drawing, 2018

Appendix 2a: Ecological Survey Recommendations, 2018

The 2018 survey for the portion of land to the rear of the Brunel building listed the following opportunities:

Habitat type	Recommendations
Seeded meadow grassland	Reduce mowing of the car park verges by undertaking one traditional hay cut in August, removing all arisings. The verges should be maintained at about 50mm from August until the winter. Another cut in March may be necessary if it has grown higher than 50mm by this time of year.
Fallow grassland	This habitat is dependent on the temporary disturbance and vegetation removal. Once every 3-5 years, a maximum of one third of this habitat should be cut back on rotation, attempting to disturb as much of the soil when doing so.
Ponds	The third attenuation pond within the woodland requires dredging. Ponds should be monitored for colonisation of terrestrial and invasive species and dredged when open water is present in less than 10% of the pond. Dredging should take place in late summer, with material left on the bank for at least 24 hours to allow aquatic species to re-enter the pond.
Buildings surrounding green spaces	Nesting opportunities for house sparrows, swifts and house martins can be provided in the form of sparrow terraces, swift boxes and house martin cups on the exterior walls of a building.
Medium-large trees	Hole-fronted and open-fronted bird boxes can be installed at 2m height, facing in a north to south-east direction.
Medium-large trees	Bat boxes can be installed at minimum heights of 2.5m (ideally 4m), facing away from external illumination and should ideally face in a south-east or south-west orientation.
General	The ecological value of the site can be enhanced through planting native species and/or those of value to wildlife, i.e. producing fruits, seeds, nuts or single-flowers. Leaving patches of unmown grass and tall herb as well as creating compost heaps/log piles creates valuable wildlife habitat, particularly for invertebrates, reptiles, amphibians and small mammals including hedgehogs3. In more residential areas, gardens can be made more permeable to wildlife, such as hedgehogs, through leaving small gaps of 13x13cm under fences. Ideally only pesticides branded as ‘wildlife friendly’ should be used.

Appendix 3 – Biodiversity Action Plan

Sustainable Development Assessment Tool Statement	Action	Lead
We have assessed the impacts of the provision of our services on local biodiversity and this has allowed us to put in place mitigating actions to reduce these impacts (e.g. appropriate bunding around fuel stores, treatment of effluent, dimming or cowling on external lights etc.)	Explore and, if possible implement, greater use of drought-tolerant planting.	FM Grounds Bouygues SDU
	Identify a succession plan for species likely to be impacted by climate change and implement as required.	FM Grounds Bouygues SDU
	Check that the current hay cut timings proposed in the Bouygues specification is still appropriate and agree an alternative approach if necessary (longer growing seasons).	Bouygues
We assess the health, safety, cleanliness and accessibility (Equality Act 2010 compliance) of our green spaces with input from users, to ensure that areas are safe and pleasant to use.	Confirm site accessibility is compliant with advice from the Equality Team. Develop action plan to address deficits.	SDU
	Investigate possibility of a dementia-friendly garden and identify potential funding sources.	SDU
	Create a feedback mechanism for those accessing NBT green spaces to ensure spaces remain safe and high quality.	SDU
	Risk-assess the addition of pollen-rich planting to identify impacts on allergy-sufferers, taking action to mitigate risks where appropriate.	SDU / Health & Safety / Respiratory Specialists
	Consult with H&S on the potential need for signage to indicate presence of ponds. Introduce signage if deemed necessary.	SDU / Health & Safety / Bouygues
We have a board approved green space and/or biodiversity action plan / strategy.	Submit BMP to August Trust Management Team/Trust Board for approval.	ECS
	Re-establish a Biodiversity Working Group.	ECS
Appropriate resource and expertise is available/in place to manage the implementation of our biodiversity action plan.	Seek expert advice when required (e.g. for surveys) and maintain relationship with expert external bodies to advise on future plans.	SDU
Our Biodiversity strategy is communicated to staff, patients and stakeholders.	Create communication plan for promoting BMP and the benefits of access to green and blue spaces and implement.	ECS
We report on the quality and accessibility of our green spaces and biodiversity regularly to the Board, emphasising the value of green space in health environments.	Include green space/biodiversity in 6-monthly Trust Board updates.	SDU
	Ensure progress from the Biodiversity Working Group is reported at SD Steering Group meetings.	SDU
We are actively and systematically working to	Erect new bird boxes.	FM Grounds Bouygues

maintain and enhance biodiversity on our estates, for example through monitoring protected species and maintaining high quality green features.	Maintain the Urban Buzz pollinator planting.	FM Grounds
	Investigate opportunity for the creation/purchase of bat boxes.	SDU
	Use NHS Forest scheme to obtain trees for new areas/gap-filling.	FM Grounds Bouygues
	Ensure grasslands are cut back every 3-5 year with as much soil disturbance as possible.	Bouygues
	Reduce grass verge (swale) mowing to once annually.	Bouygues
	Continue to include actions to support this in Green Impact.	SDU
	Develop a planting guide which includes species which are nectar/pollen-rich and provide pollen all year round, species which support caterpillars/moths (e.g. night scent), autumn/winter fruit planting, species which support birds nesting, shelter and suitable species for hedging (e.g. native/berry-rich) etc.	SDU
	Identify areas suitable for plug-planting of wildflower species (e.g. birds-foot trefoil, selfheal, wild carrot etc.)	FM Grounds Bouygues
	Investigate use of Lime Tree Park for increased tree planting.	SH&CP
	Investigate how NBT can support Mason Bee populations.	SDU
Our grounds and green spaces are maintained in a way that minimise negative impacts (e.g. low use of pesticides and sustainably managing organic wastes).	Investigate possibility of greater levels of green waste composting on site.	FM Grounds Bouygues
	Create a process for conducting ground works near tree roots.	Sustainable Health & Capital Planning (SH&CP)
We provide green and natural areas on our estate even where land is constrained (making use of small areas even when we don't have large external areas. e.g. window boxes, verges and potted plants).	Create a guide for staff on 'small area' planting opportunities.	SDU
	Identify opportunities for the incorporation of green infrastructure within existing and future building works (e.g. green roofs, green walls, solar shading using planting etc.) Develop action plan.	Sustainable Health & Capital Planning
We work with local greenspace and biodiversity partners such as wildlife trusts, local bee keepers, or the local nature partnership to improve biodiversity on our estate in line with local strategic plans.	Explore Bristol BAP and opportunities to introduce suitable species to the Southmead site.	SDU
	Liaise with neighbours to identify opportunities to create and implement hedgehog highways (e.g. creating gaps under fences) that link the Southmead site to surrounding gardens.	SDU
Our plans for maintaining and enhancing green space and	Include points of biodiversity interest in the Ways to Wellbeing map.	SDU/Fresh Arts

biodiversity and access to such are publically available and easy to understand (e.g. with clear diagrams, images and maps).	Create a simple leaflet to accompany interpretation panel.	SDU
	Order wildflower/insect reference books for library and promote to staff.	SDU
	Investigate opportunities/locations for more interpretation panels.	SDU
	Develop signage to inform staff, visitors, patients and volunteers of spaces where wildflower is growing/ areas have been left to no-mow practices to encourage biodiversity.	SDU FM Grounds Bouygues
	Consider use of artwork to engage the public and encourage greater access into Trust green spaces.	SH&CP
We can evidence that biodiversity has improved due to our actions (e.g. increase in accessible green space, increase in local species (animal and plant), reduction in invasive species).	Commission site-wide ecological survey for Southmead, taking into account climate change impacts.	SH&CP
	Commission site-wide tree survey plotted on current site plan.	SH&CP
	Monitor levels of green space on site annually.	SDU
We can show evidence (e.g. through surveys and staff feedback) that staff wellbeing has been improved by greater access to green space during working hours.	Gather evidence through GI, Wellbeing Pathfinders projects and staff surveys.	SDU/HR
Our catering and food contracts demonstrate their sustainability credentials by exceeding government guidelines (e.g. Government Buying Standards through external accreditation such as food for life, red tractor, dolphin friendly, sustainable fish cities mark etc.).	Contribute to the Going for Gold criteria.	Catering
We can evidence that biodegradable materials in our wastes, particularly food waste and green waste and other organic matter return nutrients to the soil (e.g. through compositing on-site or via a contractor).	Investigate possibility of greater levels of green waste composting on site and implement where possible.	SDU / FM Ops
We ensure all timber and paper products, after minimising demand, at least meets government guidelines (e.g. Government Buying Standards, FSC and recycled	Create a Timber Purchasing policy.	SDU/Bristol & Weston Purchasing Consortium (BWPC)

content).		
We engage with suppliers of high biotoxicity risk products to identify and manage these risk (e.g. extraction of raw materials and handling and transport of goods).	Identify products which NBT purchases which fall into this category and work with suppliers to source alternative products.	BWPC/SDU
	Contact Bristol City Council for advice on alternatives to the use of Glyphosate	SDU
We engage staff and patients in food growing onsite or at home and/or local sustainable food sourcing.	Deliver staff/patient allotment project.	SH&CP
	Identify locations for fruit tree planting.	FM Grounds / SDU / Bouygues
	Create a process for application/approval of use of outdoor spaces for growing plants/food.	SH&CP / FM Grounds
	Explore opportunities to work with Bristol Incredible edible	SDU
We provide space for the growth and cultivation of food (e.g. community food projects to support education) and food banks (e.g. sustainable food cities, incredible edible networks etc.).	Deliver staff/patient allotment project.	SH&CP
	Create a process for application/approval of use of outdoor spaces for growing plants/food.	SH&CP / FM Grounds
	Run an awareness event on growing food.	SDU
We work closely with our local strategic partnership and other key partners to plan, protect and promote the use of green space across our local area (e.g. identifying and enhancing green routes to our facility).	Create a new Walk North Bristol walking map to encourage walking to site from Southmead and the east of site.	SDU
	Provide ecological survey results to BRERC.	SDU
	Continue to engage and co-operate with the West of England Nature Partnership and support the recommended ambitions of the Nature Recovery Network methodology. Collaborate with the Green Care Strategy Working Group.	SDU
	Maintain relationship with Southmead Development Trust.	SDU
	Assist with support for Future Parks Accelerator project.	SDU
We provide staff with opportunities, and encourage engagement in, local volunteering activities in maintenance of green spaces and biodiversity.	Create more insect hotels through establishing relationships with companies who can supply waste/other materials to fill the pallets.	SDU /FM Grounds
	Create refugia for amphibians/reptiles/hedgehogs.	FM Grounds / Bouygues / SDU
	Run wildlife walks.	SDU
	Seek new volunteer to run Lavender Project.	SDU
	Promote biodiversity/nature-related events in the local area.	SDU

	Celebrate national wildlife-related days e.g. Nest Box Week, Big Butterfly Count, RSPB Big Garden Birdwatch, World Wildlife Day, International Day of Forests, World Biodiversity Day, World Wildlife Day etc.)	SDU
We promote the health benefits of green space to our staff, patients and the wider community.	Create publicity material to promote the health benefits of green space (e.g. roller banner, leaflet, intranet/internet page content, Ways to Wellbeing map).	SDU
	Explore options for greater therapeutic use of green/blue spaces.	SDU/Fresh Arts
There is open access to good quality well maintained green spaces on our estates for the use of local residents and the wider community.	Continue to promote access to the green spaces on site via existing communication channels and greater involvement with local community organisations.	SDU

Contact Us

We welcome your views....

We are continually striving to improve sustainable development here at North Bristol NHS Trust and would welcome your views on how we can do this.

Please send any comments, ideas, suggestions or feedback you may have to:

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